

1 IN THE UNITED STATES DISTRICT COURT
2 FOR THE DISTRICT OF SOUTH CAROLINA
3 CHARLESTON DIVISION

4 SOUTH CAROLINA ELECTRIC & GAS : VOLUME III
5 COMPANY :
6 :
7 :
8 VS. :
9 :
10 UGI UTILITIES, INC. : 2:06 CV 2627

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12
13 Trial in the above-captioned matter held on
14 Wednesday, March 18, 2009, commencing at 10:12 a.m., before
15 the Hon. C. Weston Houck, in Courtroom IV, United States
16 Courthouse, 85 Broad Street, Charleston, South Carolina.

17
18 APPEARANCES:

19 BRUCE FELMLY, ESQ., BARRY NEEDLEMAN, ESQ., and
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21 ELIZABETH PARTLOW, ESQ., 1320 Main Street,
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23 JAY N. VARON, ESQ., 3000 K Street NW,
24 Washington, DC, appeared for defendant.

25 PAUL BARGREN, ESQ., 777 E. Wisconsin Ave.,
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Columbia, SC, appeared for defendant.

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I N D E X

WITNESS: NEIL SHIFRIN (CONTINUED)

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1 THE COURT: All right, sir.

2 MR. FELMLY: Thank you, Your Honor.

3 BY MR. FELMLY:

4 Q. Dr. Shrifrin, good morning. When we ended up yesterday
5 afternoon, we were discussing the site contamination and you
6 were describing to the Court the various boring areas and the
7 wells and the places on the site where contamination had been
8 found. And I'd like to pick up at that point and then move on
9 there today for that.

10 And we were referring to Exhibit 80, and the slide that
11 was presented, there was the slide that shows the locations of
12 the various dots with NAPL and LNAPL, DNAPL, as well as some
13 areas where there were no hits.

14 Let me move, if I can, from that point to the next slide,
15 and ask if you can describe what you've done here further,
16 what further categorization there is with regard to the
17 information on that slide.

18 A. This picture shows the same dots as the prior one, but
19 what I've done here is overlaying on top of those dots the
20 remedy areas that were identified in the first ROD by EPA.
21 These are referred to, I think, as the source areas by EPA in
22 the ROD. And there are six of them.

23 Q. Let's do this. If can you explain to us, Doctor, what are
24 the numbers and the various boxes and areas that are depicted
25 on the screen?

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1 A. The boxes are the source areas as denoted in the first ROD
2 in the follow-up studies -- the first ROD actually identified
3 three source areas, and by the explanation of significant
4 differences published by EPA, there were six source areas, and
5 these were all the six source areas.

6 Q. And in terms of the information that may be of import to
7 the Court in relation to our case and the issues in it, why is
8 this depiction, or what information does this convey that is
9 of significance to us?

10 A. I believe the primary significance of this is that this is
11 where it has been recognized the main sources of tar exist.

12 Q. Okay. If we can bring up the next slide, please.

13 What is the purpose of this drawing which now superimposes
14 additional information relating to naphthalene in the
15 groundwater?

16 A. This is a diagram where the lines depict equal
17 concentration lines from monitoring wells of dissolved
18 naphthalene in groundwater. Now we're no longer talking about
19 tar, we're talking about contaminated groundwater. And the
20 three lines are the thousand microgram per liter contour and
21 the 100 and the ten. This is a composite of all the various
22 groundwater data that have been collected at a certain point
23 in time. I don't remember exactly what date this was from.
24 But the significance of this is that the concentrations, the
25 contaminated groundwater does extend as far south as the

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1 Calhoun Street sewer. And so it confirms that the MGP
2 contamination had been entering the Calhoun Street sewer.

3 Q. The numbers that are in relation to these -- sort of
4 contour lines of concentrations of this chemical, is that what
5 this is reflecting with the 1000, for example, would be a
6 certain concentration measure or a higher concentration
7 measure of naphthalene than, let's say the 100 line?

8 A. That's right. These are dissolved naphthalene in
9 groundwater.

10 Q. And in terms of, again, the issue of whether or not the
11 pollution or the plumes of pollution seems to be coming from
12 the area of the MGP plant, does this help in confirming or
13 addressing that issue?

14 A. This shows how the tar is serving as a source for
15 dissolving the naphthalene, this one particular constituent,
16 into groundwater, and then the contaminated groundwater plume
17 is moving downgradient.

18 MR. FELMLY: And if you could bring up the next
19 slide, please.

20 Q. Now, this one is entitled benzene in groundwater. That's
21 another chemical. Is this a similar type of study for a
22 different chemical?

23 A. That's right. Same idea, but in this case it's benzene as
24 opposed to naphthalene, dissolved in groundwater.

25 Q. And looking at the results where it's 500 in the area of

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1 the footprint of the old plant and moves out to 50 or five as
2 you get away from it, does that similarly point the finger
3 that the source is the old plant?

4 A. Right, yes.

5 MR. FELMLY: Now, if you could bring up the next
6 slide, Denise, in this Exhibit 80.

7 Q. What is this slide orienting us to or providing?

8 A. This is a plan view of the site area, and the straight
9 lines labeled A, B, C and D are -- show you the orientation of
10 what we call cross-sections that are the next several slides.

11 Now, what a cross-section is, you can think of slicing
12 through a layer cake, and if you look at the cake sideways,
13 that would be the cross-sections. So we're going to look at,
14 I assume, A to A prime first, which is a slice through the
15 ground from the west to the east. And what that allows us to
16 see is the -- not only the stratigraphy, but where the tar is
17 in the ground.

18 Q. So the first one that -- and I think this is the way these
19 are set up, the first cross-section we will look at will be
20 from A to A, which is the area that runs down sort of parallel
21 with Charlotte Street to the river. Is that right?

22 A. Right. And just to orient you a little further, through
23 the main gas holder, through the old retort area, the coal
24 shed and the tar, the tar loading area by the railroad tracks
25 in the north, and then just north of the old Luden's and steam

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1 plant.

2 Q. And so we don't have to come back to this, and when we do
3 BB, we'll be what, taking a run through the relief holder and
4 what other structures?

5 A. And the tar tanks and the tar still area.

6 Q. And just --

7 A. And south of the old steam plant.

8 Q. All right. And then CC will be going more east to west,
9 and that will take us through the old city holder?

10 A. CC will go from north to south, so perpendicular to the
11 first two, going through the old city holder, down through the
12 old Fernoline property.

13 Q. And then DD takes us where? What are the structures down
14 there?

15 A. Further east. Really east of most of the gas
16 manufacturing area, and more or less along Charlotte Street,
17 and terminating in the old Calhoun Street sewer area.

18 MR. FELMLY: Let's bring up, Denise, cross-section
19 AA, which is the next slide.

20 Q. Let's orient to it, then we'll focus in on some of the
21 pieces of it. Just again, generally you've told us what this
22 is, but this is obviously running essentially parallel with
23 Charlotte Street, and what does it depict or what do these
24 various markings on this drawing tell us?

25 A. Just as a further orientation, you can see the Cooper

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1 River over on the right-hand side, so that shows you the --
2 how the slice runs.

3 There are three things to look at on this diagram. First,
4 the purple items are equipment that was either built or
5 operated and/or operated during the period 1910 to 1926. And
6 the second thing is this allows you to look at the
7 stratigraphy that can be significant in terms of the migration
8 of both groundwater and NAPL.

9 For example, you can see at the very top of the ground
10 surface right under the purple stuff, fill and sand. And
11 that's a very porous area through which groundwater flows
12 fairly readily, and so does NAPL. And then the next layer
13 down, and these layers are very irregular, which is natural,
14 is the upper clay. And that's the area that has served as the
15 confining layer for the NAPL.

16 The red is where we have seen NAPL in boring logs and/or
17 wells.

18 So every place you see some red, there has been a notation
19 of the presence of tar, or sometimes it's called second phase
20 or nonaqueous phase liquids in the boring logs.

21 Couple of significant things in the red related to the
22 purple. Much of the red, the tar that you see, is right under
23 the areas of purple. And what that means is that the tar has
24 leaked out from pattern differentiation, you can tell that the
25 tar has leaked out from generally those overlying purple

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1 structures.

2 The other thing you can see is that the tar generally has
3 come to rest on or near the upper clay layer, which is to be
4 expected, that that clay layer is generally a confining layer,
5 so as the dense tar moves down through the subsurface, it gets
6 caught and resides on top of that clay layer. So under the
7 gas holder you see that there's a concentration of red there
8 right -- starting at the upper clay and moving a few feet
9 above it.

10 Another thing that's significant here is if you go under
11 that first layer of clay, you see what's called the middle
12 sand unit. That's this here. That's the intermediate
13 aquifer. And the intermediate aquifer, particularly in this
14 area, is contaminated with tar, in my opinion, because of the
15 pilings that were built when UGI built the steam plant.

16 Q. Let me --

17 A. Those pilings created conduit for tar to move through
18 the -- what would otherwise be the confining layer, this clay
19 layer, into the lower aquifer.

20 MR. FELMLY: Let me just ask Denise to sort of zoom
21 up on the area underneath the old steam plant so we can see
22 what you're talking about there.

23 Q. The pilings that you're talking about and the depth that
24 they go to, sir, is where on this drawing?

25 A. The pilings are -- two are just noted symbolically are

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1 these -- look like little railroad tracks. They're actually
2 wooden pilings that extend, I think, down about 60 feet below
3 the ground. And there were actually 1700 of these pilings
4 installed when UGI built the steam plant.

5 MR. FELMLY: Denise, could you bring up exhibit --
6 well, it's from the --

7 THE COURT: Why so many?

8 A. Apparently it was all marshland where that was built, and
9 for the structural stability they had to put them, I think
10 one -- on one foot centers.

11 MR. FELMLY: It's in Exhibit 157, but it's Bates
12 number 1920. It's the article about the pilings and it's a
13 very small piece.

14 BY MR. FELMLY:

15 Q. This is a November 13, 1910 article of the local paper.
16 And what it tells us is 1700 to be driven, buried news of the
17 waterfront, and if we can read this, it says the Gadsden
18 Construction Company which is now building the foundation for
19 the Consolidated Company's new powerhouse at the foot of
20 Charlotte Street will finish the pile driving about the 1st of
21 December. There are to be more than 1700 piles in this
22 foundation. To date, 1275 have been driven.

23 So that's what -- in terms of this quantity that you're
24 describing, although there are two, I guess, depicted, wooden
25 pile runs on this cross-section A, you're saying that that

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1 structure actually had, when it was completed, 1700?

2 A. Right.

3 Q. And is it -- do you believe -- or what do you believe in
4 terms of the depth of which those piles went?

5 A. I believe they were 60 feet deep.

6 MR. FELMLY: And is this -- as we look at the drawing
7 that -- let's go back, Denise, to the drawing that we were
8 looking at before, a cross-section A, if you would. If you
9 look at that and zoom in on that area down here in relation to
10 the -- at the bottom of the piles, and -- is that -- you're
11 going to have to go a little bit to the right to pick up the
12 scale, Denise.

13 Q. If we pick up the scale, does that conform to what we're
14 seeing here in terms of this drawing and the depths?

15 A. Right, the ground surface is a couple of feet above sea
16 level, and the bottom of the piles as we have it here is about
17 55 feet below sea level.

18 Q. So in terms of the issue that you're concerned about, this
19 has something to do with the penetration of the clay zone?

20 A. It created a pin cushion out of that otherwise confining
21 layer, which created conduit for NAPL to migrate down.

22 Q. And are you seeing that in the borings and in the test
23 holes that are done underneath this steam plant?

24 A. You see that right here in these observations of NAPL.

25 I should point out, too, that even though this site has a

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1 lot of sampling, we're limited by wherever we have data
2 points. So if you had perfect vision of this subsurface, my
3 opinion would be that you would see much more NAPL in this
4 intermediate aquifer. Right now we're only limited by the
5 scattered places that we have data, so that's all we can see
6 here.

7 MR. FELMLY: Denise, if you could go back to the full
8 picture of this exhibit for a moment.

9 Q. I was going to ask you about that. I mean, as you look at
10 these pictures and you see the orange or reddish areas for
11 NAPL, and you say well, it's sort of scattered around in
12 various places, sometimes deep, sometimes up by the clay area,
13 the only places you're seeing NAPL here, happened to be the
14 spots where a hole was dug. Is that right?

15 A. That's right. I mean, that's all you could possibly see.

16 Q. So let's say, for example, if you're talking about the
17 area that is up in the vicinity here of the gas holder where
18 there's obviously a fair amount of NAPL, what's the likelihood
19 that if an adjacent hole was drilled within three or
20 four feet, that you would also find NAPL in that hole?

21 A. If you drilled more holes, invariably you would see more
22 NAPL. Now, you have to temper that a little bit with the
23 notion that NAPL meanders in the ground. So as NAPL falls
24 through the subsurface, if it hits slightly different types of
25 porosities or stratigraphic areas, it might take a little left

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1 turn, a little right turn or whatever. So it is possible to
2 put a hole in the ground and not see NAPL, and put another
3 hole in the ground six inches away and actually see NAPL. But
4 if you had a thousand holes in this area, you would see a much
5 more continuous pool of NAPL in this area.

6 Q. Where is -- is the wooden bottom to the -- this particular
7 city holder shown?

8 A. It's not really shown here, no. It's -- oh, yeah, it is,
9 I guess. It's right here.

10 Q. It's actually labeled wood bottom?

11 A. Wood bottom, that's right.

12 Q. And what -- at about what depth is that wood bottom of
13 that holder?

14 A. It's about 20 feet below sea level. There's an
15 exaggeration here, the way we drew this, it's what you would
16 call a vertical exaggeration. A foot of depth is crunched up
17 when you go widthwise, so that's why it looks deep and skinny
18 here. But in general, the bottom of the holder was down about
19 20 feet below sea level, and looked to -- it was in general
20 that dimension there, that I've outlined.

21 Q. And is that structure still there?

22 A. Yes.

23 Q. The wood bottom -- I mean I realize the superstructure is
24 gone, but the wood bottom in the area of the masonry down
25 there is still there?

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1 A. Yes. And you can see that there is tar inside that holder
2 bottom today. And, in fact, there's a recovery well inside
3 that holder bottom where the gas company is continuously
4 pumping tar out of that bottom. But there's also tar below
5 it.

6 Q. So that gas holder currently is serving as a reservoir of
7 tar?

8 A. Right.

9 MR. FELMLY: If we could go to the next drawing, BB,
10 please.

11 Q. Now, this is the drawing that runs still somewhat parallel
12 with Charlotte Street, but now at the southern side of the
13 site and runs through the relief holder and some of the tar
14 wells, is that right?

15 A. That's right. This is running along the southern border
16 of the property from east to west, and again you can see the
17 Cooper River on the right, which gives you an understanding of
18 how this is sliced through the ground.

19 Q. And in terms of this drawing identifying for the Court
20 where NAPL is present, and the major structures that would
21 bear on the question of whether there's a linkage or a
22 relationship between the equipment that was operated there
23 during the period of UGI operation and the NAPL, what does
24 this tell us?

25 A. The -- there's a concentration of NAPL within the fill,

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1 and on the upper clay top. And unfortunately, there's not a
2 lot of data points deep in the relief holder area, but in my
3 opinion if there were more data locations around the relief
4 holder very deep into the intermediate aquifer, we would see
5 the same problem that we had at the Luden's property, because
6 the relief holder also was built on piles. I don't remember
7 offhand how many, but I believe it was also on one foot
8 centers.

9 And these piles are illustrated here by these two points.

10 Q. And how deep do the piles for the relief holder when UGI
11 built that, how deep do they go?

12 A. Again, I believe they're about 60 feet.

13 Q. Is there an indication that -- although not as much as the
14 earlier cross-section -- that there is NAPL in the area below
15 the clay layer?

16 A. There's indications that the intermediate aquifer is
17 contaminated, and so that would be an indication that there's
18 a source somewhere that's contaminating the groundwater in the
19 intermediate aquifer. I'm not -- I don't recall the data well
20 enough to know if this particular area has contamination in
21 the intermediate aquifer, but I think it does.

22 Q. Let's go to the next slide, which is CC. Now, this is one
23 that is cutting north to south, sort of the perpendicular or
24 close to it, to Charlotte Street, and this goes right through
25 the city holder, is that right?

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1 A. That's right. This slice is -- the right-hand side of
2 this slice is near the Calhoun Street sewer. And the
3 left-hand side of this slice is up on the northernmost part of
4 the site. And it slices through the old gas holder, the city
5 holder, and you can see tar both inside the holder remaining,
6 as well as tar underneath the holder that has leaked out of
7 the holder.

8 Q. And then last of these cross-sections, if you could bring
9 up cross-section DD, which runs closer to the Cooper River
10 from the -- this cross-section runs north to south closer to
11 the Cooper River from the footprint of the site. And what
12 information does this provide us?

13 A. This shows you that there's quite a bit of tar, again,
14 moving towards the Calhoun Street sewer. Shows you the
15 contour of the clay layer which is uneven, not unexpected.
16 Another element to this is -- I believe it was 1906, or 1911,
17 I can't remember, that this artesian well was installed to
18 supply water to the plant. And they did observe tar during
19 the installation of that well, and that's denoted here by this
20 reddish-purplish zone.

21 Q. In terms of the assessment of whether the groundwater and
22 whether constituents in the groundwater are coming from the
23 manufactured gas plant, have you looked at the -- I know I'm
24 not going to be able to pronounce this, the stratigraphy of
25 the subsurface in terms of the clay soils in order to gain an

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1 impression of how the flow of contaminants either on the clay
2 layer or in the groundwater might flow?

3 A. Yeah. As best we can do, there is a contour of the top of
4 the clay layer, the primary clay layer, the upper clay layer,
5 which is a significant factor determining the migration of the
6 tar. On the other hand, you have to realize that the tar
7 leaked out of the tanks, the tar tanks, the relief holder,
8 along the southern side of the site. And it didn't
9 immediately go down to the clay layers. In fact, this is a
10 good picture of it. Tar was leaking out of these items here.
11 And it didn't go straight down to the clay and get trapped.
12 And you can see that because you don't see an accumulation in
13 this bowl. What happened really is tar migrates downward and
14 outward, because it hits little -- little lenses of different
15 stratigraphy. So you can see a general migration in this
16 direction over towards the Fernoline property, and towards the
17 Calhoun Street sewer. And that's why you see tar in the mid
18 zone here above the clay, because it's meandering downward and
19 outward, not just straight to the clay and along the top of
20 the clay.

21 Q. Now, thinking back to the overall layout of the plant and
22 the position of the Fernoline plant, which is at least some
23 question as to whether the Fernoline plant contributed to any
24 of the contamination. What's your opinion, based on all this
25 analysis that you've done, as to whether the contamination

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1 that's now shown in the area of the Fernoline plant has its
2 relationship to migrating tar, as opposed to something that
3 originated on that property?

4 A. My opinion is that the tar on the Fernoline property is
5 from the MGP. And there's three reasons for that. First, we
6 see this migration pattern. Second, I've looked at the top,
7 the contour of the clay, and even if some of the tar reached
8 the surface of the clay to migrate, there is a hump and a hole
9 in the top of the clay that would allow the migration over to
10 Fernoline property.

11 Q. Have you done a diagram that shows that?

12 A. Yes.

13 MR. FELMLY: Can we bring up, Denise, the next
14 diagram called top of clay.

15 Q. All right. So we have the diagram up here as part of this
16 Exhibit 80 that you've indicated deals with it. And this is
17 superimposed, I gather, on top of the general layout we've
18 been dealing with, with the plant, but it may be helpful for
19 you to -- with the magic marker there to identify where the
20 Fernoline area is and where the substation area and the old
21 plant was. What you're drawing is the Fernoline plant?

22 A. That's Fernoline. And the MGP is just to the north of
23 that. And there's the relief holder, tar tanks, and generally
24 this is a tar source area right here. Now, just to orient
25 this figure, the cold colors are higher elevations and the hot

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1 colors are deeper lower elevations. So this is a hump. A
2 high zone in the top of the clay. Whereas this is a low zone,
3 a bowl, in the top of the clay.

4 And for these source areas here of tar, you could see that
5 some of the tar is going to accumulate here, but some of the
6 tar is going to migrate over to this area, into these low
7 zones, and be pushed over by these humps. It's not going to
8 allow the tar to move over to that area. But it's going
9 to accumulate in this low zone here, which happens to be, I
10 believe it's area six. And area three, four and six, I think,
11 from the EPA material for source zones.

12 Now, that's not to say that that's the only place that tar
13 is going. But it -- there is stratigraphic information that
14 allows you to conclude that tar migration is possible from
15 that area.

16 The final nail in the coffin here is that the
17 fingerprinting data, there was chemical fingerprinting data
18 for the tar in this area, and it was noted to be primarily
19 carbureted water gas tar. The reason that that's significant
20 is that the Fernoline plant closed in, I believe it was 1888.
21 So the Fernoline plant, although it would be a suspected
22 source of tar, because it refined tar and used tar, the tar
23 that it handled had to be coal tar. Because the carbureted
24 water gas tar from the plant didn't start until 1910. So the
25 Fernoline plant was gone by 1888, and we're seeing in this

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1 area, carbureted water gas tar. So that tar had to have
2 migrated after 1910.

3 Q. Let me come back to the fingerprinting in a minute.

4 MR. FELMLY: Your Honor, at this point I would move
5 that Exhibit 80, which is the entire series of site drawings
6 that Dr. Shrifrin has gone through this morning, be marked as
7 a full exhibit, as a summary of the points that he's rendered.

8 MR. VARON: Our objection is just the UGI control
9 reference.

10 THE COURT: Say what?

11 MR. VARON: Just to the UGI controlled references on
12 the equipment.

13 THE COURT: Okay.

14 (Plaintiff's Exhibit 80 received.)

15 MR. FELMLY: It can be marked?

16 THE COURT: Yes, I'm going to mark it in.

17 BY MR. FELMLY:

18 Q. One other thing, Doctor, although I'm not going spend any
19 real time on this Exhibit, I understand it has a relationship
20 to this. Exhibit 96 is entitled Gradient Appendix C
21 groundwater concentration contours. And there's quite a bit
22 of material and reports and drawings in here. Is this
23 underlying supporting information that relates to a lot of the
24 work you did in this area of trying to assess how the
25 groundwater would move and the background for the creation of

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1 some of the materials that you've been presenting?

2 A. Yes. And one other item related to that is the
3 naphthalene and benzene in groundwater contours that I showed
4 a moment ago, those are just redrawings of what's in this
5 appendix. That's not our reinterpretation of the data, that
6 was just a redrawing of the data in this appendix.

7 Q. So Exhibit 96, which was work that was done by various
8 contractors working on the site, would be a source material
9 you used?

10 A. That's right. And, in fact, those concentration contours
11 were taken out of the ROD. Out of EPA's ROD.

12 MR. FELMLY: Your Honor, just for purposes of having
13 the support material there, I would ask that Exhibit 96 be
14 admitted as full exhibit.

15 MR. VARON: No objection.

16 (Plaintiff's Exhibit 96 received.)

17 MR. FELMLY: And of a similar vein, in terms of a
18 little bit of housekeeping here, a lot of these drawings that
19 we've been looking at on the computer are available in a
20 larger size that would make it easier for the Court to work
21 with an actual map, although I think it was easier to display
22 it.

23 I'm going to move the admission of Exhibit 104, which is
24 the cross-section map in a fuller size, which may be hopefully
25 easier for the Court to work with, for cross-section A and

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1 move that as a full exhibit.

2 MR. VARON: Same thing about the UGI equipment.

3 THE COURT: Okay. Without objection.

4 (Plaintiff's Exhibit 104 received.)

5 MR. FELMLY: And then Exhibit 105 is the
6 cross-section map for section BB. I'd move that on the same
7 basis as a full exhibit.

8 THE COURT: Any objection?

9 MR. VARON: No, Your Honor.

10 (Plaintiff's Exhibit 105 received.)

11 MR. FELMLY: Then finally Exhibit 106 is the map that
12 shows the cross-section for CC, and ask that that be marked as
13 a full exhibit.

14 MR. VARON: Fine.

15 (Plaintiff's Exhibit 106 received.)

16 MR. FELMLY: There's one other map that makes it a
17 little easier to see, Exhibit 103 again is a map, though the
18 colors look a little different on this than on the screen,
19 this is the source map that showed how it was related to the
20 ROD areas, that's Exhibit 103, and for the same reason I'd
21 move that be marked as a full exhibit so the Court could have
22 the larger picture.

23 THE COURT: Any objection?

24 MR. VARON: No.

25 (Plaintiff's 103 received.)

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1 BY MR. FELMLY:

2 Q. Now I want to talk with you, Dr. Shrifrin, about something
3 you mentioned a moment ago about fingerprinting. And is that
4 the word they use in the trade to talk about how you
5 differentiate one type of tar from another?

6 A. It's a tool used by forensic chemists.

7 Q. And if you could just briefly describe what basically is
8 the methodology or the science that is undertaken to
9 differentiate areas of tar and whether tar -- well, to
10 distinguish areas of tar by type, for whatever reason.

11 A. There's a couple of methods that are used, all summarized
12 under the category of fingerprinting. The first and foremost
13 technique is called gas chromatography, where a sample of tar
14 is put into an instrument in the laboratory, and the pattern
15 of instrument response is compared to the patterns of known
16 quantities, known standards. And the pattern matching,
17 similar to fingerprint pattern matching, is used to determine
18 the nature of the unknown sample. And that was done at this
19 site.

20 In addition, there are other tools that are used. There's
21 other types of analytical techniques, such as infrared
22 spectrometry and other techniques that are used also to use
23 pattern recognition. But getting a different kind of
24 instrument response, which basically means looking at the
25 individual chemicals in a slightly different way.

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1 In addition to that, a typical tool used is called ratios,
2 sometimes single ratios, sometimes double ratios. Key ratios
3 in the case of tars are the ratios of fluoranthene to pyrene
4 which are two chemical constituents in tar. And the ratio of
5 fluorine to dibenzofuran. Again, two constituents in tar.
6 And those ratios are very different from -- in coal tars than
7 they are in carbureted water tars, so that's revealing.

8 So between the pattern recognition from the instrument
9 fingerprinting and the PAH ratios, often it's easy to discern
10 the difference between coal tar and carbureted water gas tar.
11 And that was done at this site on about -- maybe 20 or 30
12 samples.

13 Q. You did not commission that fingerprinting work, that
14 wasn't something you put in motion for purposes of your
15 engagement, did you?

16 A. That's correct.

17 THE COURT: As far as the fingerprinting, explain it
18 in a different way. Explain it as to exactly what was done
19 here. What tar did they take and what did they compare it to?

20 A. Okay. They took samples -- like I said, about 30 samples
21 all over the site, but focused on two areas. One they called
22 on site and one they called off site. They took a sample from
23 inside the City gas holder of tar, and they took a sample
24 actually over down on the Fernoline property.

25 THE COURT: That's the sample of known quantity?

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1 A. Well --

2 THE COURT: Quality.

3 A. No, actually those are still at this point unknown
4 samples. And they analyzed those two samples and found very
5 similar patterns. And they -- they, by the way, is a
6 laboratory in Boston called META Analytical. META
7 characterized those samples as carbureted water gas because
8 they have a lot of experience with fingerprinting and they
9 understand the difference. Then they took unknown samples
10 from the Luden's area, and they analyzed those samples in the
11 same way, and characterized those as coal tar samples. Simply
12 because the pattern of the instrument response was
13 dramatically different from the pattern of the other two
14 samples, where, again, from their experience, they knew that
15 that -- the latter pattern from Luden's was coal tar.

16 Then they took actual coal tar samples of known coal tar,
17 so these would be called standards, analytical standards, they
18 took a coal tar sample, a creosote sample and a petroleum
19 sample. And they ran those through their instruments and they
20 confirmed that the pattern over by Luden's was similar to the
21 coal tar, and so they confirmed in their own mind that the
22 Luden's area had coal tar, and the Fernoline and the gas
23 holder area had carbureted water gas tar.

24 So they had two site specific standards, if you will,
25 Luden's samples and the gas holder sample. And then they

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1 analyzed all the other samples and they compared them to those
2 two. And they came to conclusions this one is similar to the
3 Luden's area, and this one is for this one, and similar to the
4 gas holder area.

5 So by doing that, they -- from all 30 samples, they said
6 these are like carbureted water gas tar and those are like
7 coal tar. And they were able to differentiate where the coal
8 tar was versus where the carbureted water gas tar was.

9 Q. Is Exhibit 173, a rather large exhibit, and I'm not going
10 to display it on the technology, this is entitled META,
11 M-E-T-A, fingerprinting reports.

12 Are these the underlying studies and the data that was
13 prepared by these scientists in doing this work?

14 A. Yes.

15 Q. And have you, in terms of your understanding of this and
16 what you've been describing to the Court, have you carefully
17 gone through this information to understand what it tells us?

18 A. Yes.

19 MR. FELMLY: Your Honor, I'd ask that this background
20 data on the fingerprinting from META be marked as a full
21 exhibit.

22 MR. VARON: One second.

23 THE COURT: Any objection?

24 MR. VARON: No objection.

25 THE COURT: I mean, obviously he would have to call

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1 the people that did the work to have it admitted, but if you
2 don't object to it, then fine. Without objection.

3 (Plaintiff's Exhibit 173 received.)

4 MR. FELMLY: They're prepared to come, if it became
5 necessary.

6 THE COURT: You don't plan to call them unless you
7 have to.

8 MR. FELMLY: If it becomes an issue, the gentleman is
9 standing by.

10 THE COURT: They have not made an objection.

11 MR. FELMLY: Okay.

12 BY MR. FELMLY:

13 Q. Now what I'd like to do, and this, unfortunately, I'm
14 going to have to go to the ELMO, if I can, because this really
15 didn't work very well on the Sanction technology. What I'm
16 going to do, and it's a -- first of all, let me orient you and
17 the Court so you understand what I'm doing. The map that I'm
18 holding in my hand is marked Exhibit 108.

19 MR. FELMLY: I probably could pull out here, Your
20 Honor, to get you a copy of Exhibit 108, if I can take a
21 second. This is the actual original. And I might use the
22 ELMO to focus in on a few things.

23 Q. But first of all, Dr. Shrifrin, if you would be good
24 enough to describe to us, having in mind the description you
25 just gave to the Court, what does this Exhibit 108 show in

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1 relation to the efforts that distinguish coal tar from
2 carbureted water gas tar?

3 A. This is a diagram that I put together, so this is not
4 META's work, but this is my interpretation of META's work.
5 Where every box that you see, no matter what its color is, is
6 a fingerprinting data point. And from -- taken from the META
7 reports verbatim. So there are words here you see like likely
8 CWG tar, likely coal tar, those are the phrases that the META
9 reports used. And that's the process that I mentioned earlier
10 where they compared them to a sample from the gas holder, and
11 they said this is likely similar to that. And by the way,
12 then they did further analysis, such as the ratios, the PAH
13 ratios, to confirm that in their mind. So the laboratory was
14 fairly certain that their characterizations of carbureted
15 water gas tar and coal tar are fairly certain.

16 At any rate, all the boxes show you the scope of the
17 fingerprinting effort, which in my experience is a very large
18 effort. I mean, typically we see data that are two or three
19 samples have been fingerprinted. In this case, probably 30 or
20 more samples have been fingerprinted, which gives you a very
21 good sense of where the coal tar is and where the carbureted
22 water gas tar is.

23 A quick way to view this and understand it, is green is
24 coal tar and everything else is carbureted water gas tar. So
25 where you see the green is where coal tar is, and the yellow,

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1 red or brown are varying degrees of their certainty about
2 carbureted water gas tar.

3 So one very important element to this, in my opinion, is
4 that with a couple of exceptions, all of the tar down on
5 Fernoline is carbureted water gas tar. There are two coal tar
6 hits down there, but otherwise it's all carbureted water gas
7 tar.

8 What that says to me is that that tar migrated to that
9 area after 1910.

10 Q. Let me ask you one question in terms of the history of the
11 site and the production of coal gas tar and carbureted water
12 gas tar. The new carbureted water gas plant came in at the
13 time UGI came in, and that was in what year?

14 A. 1910. Towards the end of 1910.

15 Q. So there was no carbureted water gas, as far as anybody
16 knows, that was manufactured on this site before 1910.

17 A. That's right.

18 Q. Did coal gas ever get manufactured on the site again after
19 the new plant, the new carbureted water gas plant was started
20 up in 1911 or 1910, when they built it?

21 A. Yes. There is documentation that the coal gas plant got
22 fired up again in -- it was either 1917 or 1918.

23 Q. During the period of UGI involvement on the site?

24 A. Right.

25 Q. And how long, or what period of time did they make coal

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1 gas in that later period around the time of World War I?

2 A. You know, it's unclear from the documentation when it
3 ended. It's only clear when it started. But from the
4 description in the documentation, that it was fired up because
5 there was a shortage of gas and they had to supplement because
6 of the extra cold winter. It could be argued that it was only
7 for that one year during 1917 or '18.

8 There was also coal tar made at the beginning of UGI's
9 tenure in 1910. And there was coal tar stockpiled on the site
10 when UGI's lease started. 1910.

11 Q. What do you mean stockpiled?

12 A. There was 90,000 -- from CCR&L director minutes, in 19 --
13 for the calendar 1909, there are tar sales information. And
14 in 1909 the plant made 155,000 gallons of tar, but sold only
15 60,000 gallons of tar, from those minutes.

16 So what that means is going into 1910, there were 90 --
17 85,000 gallons of tar stockpiled at the plant. Coal tar. And
18 that's when UGI's lease of the plant started, was the lease
19 was signed in June of 1910, and the lease itself says it's
20 effective back to January 1st of 1910.

21 Q. So in terms of coal tar being found in the subsurface or
22 as part of the contamination on the site --

23 THE COURT: Let me interrupt you. Do you have any
24 records as to when that stockpile was removed from the site?

25 A. No, there is -- the next record of sales, there's some

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1 records of production, but the next record of sales is not
2 till -- I think it's 1919. But that doesn't mean it wasn't
3 sold. It just -- this is the records that survived.

4 BY MR. FELMLY:

5 Q. With regard to coal tar, coal tar was the system of making
6 the gas and was the product between 1955 and the time they
7 turned on the carbureted water gas plant after it was built in
8 1910 or '11?

9 A. Yes, 1855 to 1910.

10 Q. I lost a century. Okay. So and then there's a period
11 where we don't know -- you don't know how long a period, maybe
12 a brief period in the 1917 to 1918 period where coal tar was
13 manufactured and possibly could have been released in some
14 amount to the environment?

15 A. Right.

16 Q. And then there's the issue of whatever was on the site and
17 being stored, and whatever happened to that at the time UGI
18 came into Charleston and the new operation began?

19 A. Right.

20 Q. As to carbureted water gas, though, there would be no
21 pre-1910 history for that product on the site.

22 A. That's right.

23 Q. But carbureted water gas continued to be made after UGI's
24 involvement with the company ended in 1926?

25 A. That's correct.

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1 Q. Now, going to this site, you've told us about the
2 Fernoline plant, and that's the area in the lower portion, and
3 your conclusion on that, if I understand it, is you've got a
4 lot of carbureted water gas there, some coal tar hits. What's
5 your opinion as to the probable source of that carbureted
6 water gas?

7 A. The probable source is the MGP after 1910.

8 Q. And does this relate to the discussion you were describing
9 to the Court earlier where we had that top of the clay layer
10 and you were showing what the stratigraphy was under the
11 surface and how that migration would occur?

12 A. That's right. There's physical support for the notion of
13 tar migration, and this is chemical support for it.

14 Q. Now, on the substation area itself, the area that was the
15 former footprint of the gas plant, how would you characterize
16 the fact that you've got both the orange boxes and the green
17 boxes, you've got an orange box in the holder and they're
18 scattered around there in a mixture.

19 A. It's not surprising that on the MGP itself, there's a
20 mixture of both coal tar and carbureted water gas tar. The
21 equipment at the plant most likely started leaking almost from
22 the day that it was built. And so for a long period of time,
23 55 years, that plant operated as a coal gas plant. And so
24 it's not surprising that there's coal tar in the subsurface,
25 as well as the carbureted water gas tar.

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1 Q. And then as you move down towards the Imax theater, the
2 former Luden's area and the area a little bit more proximate
3 to the Cooper River from there, is that also an area of mixed
4 coal and carbureted water gas tar?

5 A. Yes.

6 Q. And --

7 THE COURT: When you speak of Luden's, you're
8 speaking of a marina?

9 MR. FELMLY: My understanding is -- I am. My
10 understanding is that historically there was a former marina
11 in that area. And that in 1911 and '12, a steam power plant
12 was built on that site.

13 THE COURT: The Luden's is a business in Charleston
14 now, and it operates in that area, kind of an outfitter store.
15 I'm not positive where they were located. Now they're located
16 just off of East Bay Street about a block and a half from this
17 site.

18 MR. FELMLY: Seems unlikely that it's a coincidence.
19 They were probably --

20 THE COURT: I don't know. You've been mentioning
21 Luden's; I just assumed it was a store until I looked at this
22 map and see where it's a marina.

23 MR. FELMLY: I don't think it's that property,
24 because it's not East Bay.

25 THE COURT: I don't think it's that property either.

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1 I've been to the old store, but I can't recall exactly where
2 it was, but I think it was -- it's certainly in this general
3 area. Or it was. And now it's moved over, you can't really
4 see it, it kind of backs up to East Bay Street, there's a
5 little street one block over that you have to go down to get
6 to it. But anyway, I understand.

7 BY MR. FELMLY:

8 Q. So in terms of the Luden's area, you've got a mixture of
9 coal tar and the carbureted water gas tar. And what, based on
10 your experience and knowledge and training and work with
11 transport, including all the work with MGP plants, what's the
12 probable source of the mixture of coal tar and carbureted
13 water gas tar you see down in that area towards the river?

14 A. Migration from the MGP as well as the possibility of
15 deposition during the 1910 era.

16 MR. FELMLY: Your Honor, I'd ask that the Exhibit
17 108, which obviously summarizes a great deal of the META
18 report data into the map be marked as a full exhibit.

19 THE COURT: Any objection?

20 MR. VARON: No, just the same UGI control thing, Your
21 Honor.

22 (Plaintiff's Exhibit 108 received.)

23 THE COURT: You say same objection.

24 MR. VARON: I'm sorry, Your Honor, you were -- and
25 I've been doing this, I guess, throughout most of the

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1 proceeding, when we had this --

2 THE COURT: I understand the objection you made at
3 the conclusions that he drew connecting your company to these
4 things. I just don't see that on this particular map.

5 MR. VARON: I think it's the key, Your Honor.

6 THE COURT: What?

7 MR. VARON: We have a black and white copy. I was
8 assuming that this was still showing UGI control. But maybe
9 it's not.

10 MR. FELMLY: I don't think this one says UGI control.

11 THE COURT: But if it does, it's his opinion and the
12 defendant doesn't agree.

13 MR. FELMLY: Woops, it does, it has it down in the
14 lower left-hand corner. But otherwise you don't have any
15 objection?

16 THE COURT: Without objection.

17 MR. VARON: Correct.

18 MR. FELMLY: Thank you.

19 BY MR. FELMLY:

20 Q. A couple of other things on the intermediate aquifer and
21 the stratigraphy here. There has been discussion in the
22 various environmental reports, and Mr. Effinger was talking
23 the other day about the issue of whether there might be
24 another source contributing benzene to the plant. Are you
25 familiar from the environmental materials that there has been

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1 efforts to try to find that or to examine that question?

2 A. Yes.

3 Q. And what's your opinion with respect to whether there is
4 evident on any of these environmental studies, another source
5 for benzene?

6 A. There is a concentration of benzene to the north of the
7 MGP. Whether that's from migration of NAPL from the MGP or an
8 independent source, is unclear to me. But I don't think it
9 matters, because there's nothing about the remedy that would
10 be different because of it.

11 Q. I'm not sure I understand what you mean. You mean in
12 terms of what's being done to remediate the site, it wouldn't
13 have changed the plan or the RODs?

14 A. That's correct.

15 Q. And nobody has been able to identify what that source
16 might have ever been in terms of trying to find another party
17 that might be out there to respond to this situation?

18 A. So far that's right.

19 Q. In light of all of what we just went through about the
20 nature of the --

21 THE COURT: Let me interrupt you. In spite of the
22 fact that you -- this benzene, what does the EPA say about
23 that? I mean, do they tie it to this site?

24 A. I don't believe they do. And --

25 THE COURT: Have they required it to be cleaned up?

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1 A. No. And I think they're still confused about the source
2 also.

3 THE COURT: Could it have come from this site?

4 A. It's possible it could have come from migration of tar
5 that went out in that direction. Nobody really knows. I have
6 seen reference to the possible existence of gas stations
7 historically there, and gas stations would be a typical
8 source.

9 THE COURT: Okay. But as far as SCE&G's cleanup,
10 that material is not involved?

11 A. Not directly. That's right.

12 THE COURT: Are they going to have to clean it up?

13 A. They have not been told to clean it up.

14 THE COURT: Okay. Is it involved in their estimated
15 future costs?

16 A. I don't think so. The estimated future costs have not
17 really resolved the issue of the technical impracticability
18 assessment, which would -- would potentially be a complete
19 change in the remedy. And if the remedy were changed, because
20 of the technical impracticability, basically the remedy would
21 become a containment remedy as opposed to a collection remedy.
22 And you would be containing possibly that same benzene. But
23 it wouldn't add to the cost of it.

24 THE COURT: Okay.

25

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1 BY MR. FELMLY:

2 Q. So in terms of looking at the site in this litigation and
3 the issues of the parties here, you don't believe the benzene
4 questions that might have been an off-site location makes any
5 difference to the matters we're sorting out here?

6 A. That's correct.

7 Q. Let me turn your attention to issues that bear on the
8 remedies that are in play and what Mr. Effinger talked about
9 the other day. You created a map.

10 MR. FELMLY: And, Denise, is this in Sanction?

11 Exhibit 107? No? Exhibit 107, just to orient the Court and
12 the witness, is a figure that's entitled remedies, and is
13 obviously a tremendous amount of data on it.

14 Q. My first question, Mr. Shifrin, is what is the purpose of
15 this and what does it depict?

16 A. That diagram was our attempt to put all of the remedy
17 elements on a single map so that it could be used as a
18 reference to understand wherever you are geographically in the
19 area, what was being done for remediation. I have a
20 simplified version of that.

21 Q. Well, what I was going to do was try to get a more
22 detailed one marked, then get us to one that we can actually
23 hopefully understand a little bit easier. I'll do that in a
24 moment.

25 Well, first of all, this would be a very comprehensive

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1 summary that fills in a lot of data about all the various
2 remedies, and would provide with its sort of indications of
3 summary boxes, what the source information is for that?

4 A. The underlying information as well as the activity. In
5 other words, in one box you'll see X tons of soil were
6 excavated. So it's a combination of what's been done, what's
7 been planned, and all that.

8 Q. All right. And in terms of the value or function of this,
9 this would be a source of detailed reference, because we're
10 going to move to some more simple drawings, is that a fair --

11 A. That's right. I think a good way to think about that
12 diagram, because it's overwhelming, I mean it's very complex,
13 if you have a question about what was done at the sediment
14 area, you could go to that map, look for the sediment area,
15 look at the box and get a summary of what was done.

16 Q. Okay.

17 MR. FELMLY: Your Honor, I'd ask that the detailed
18 map, which is Exhibit 107, be marked as a full exhibit. I
19 think it will be a good baseline, but I'm then going to move
20 to stuff that's easier to see online. But I would ask this be
21 marked as a full exhibit.

22 MR. VARON: Same objection, Your Honor.

23 THE COURT: All right. Without objection.

24 (Plaintiff's Exhibit 107 received.)

25 BY MR. FELMLY:

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1 MR. FELMLY: So let's turn to Exhibit 82. And,
2 Denise, if you could bring that up.

3 Q. This is dealing with the analysis you've made of the
4 remedies and take you through this. I guess we have to switch
5 back.

6 What's the -- let's go to the first slide and orient
7 ourselves to what you've done, and then into some of the
8 drawings. This first document is called a response timeline,
9 and this portion of it deals with the area before 2000. What
10 is this document, sir?

11 A. What I tried to do here is list the major events that have
12 occurred related to studies and remediation. So, for example,
13 the first red dot on the left is the administrative order of
14 consent for the RIFS, which was signed, I believe in 1993.
15 During that period also you see underneath in blue, the flag,
16 there is the initial site investigation that was performed at
17 the site. So that kicked off all of the superfund actions,
18 whether it be studies or remedies. As you go over to 1999, in
19 the last blue flag on the right-hand side you can see the
20 Luden's investigation report was published, I think it was by
21 IT Corporation, contractor for SCANA.

22 On the top, on the top are the regulatory actions. And on
23 the bottom are the gas company's actions related to
24 remediation and/or studies.

25 Q. And does this continue for the period after 2000 with the

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1 next slide?

2 A. Yeah, because of the time frame goes on, we had to divide
3 it up into two periods like this. So this one here is for the
4 time period after 2000, and even though we have the dates
5 both beneath 2000 on here, we've only flagged items,
6 activities that go after 2000.

7 So you can see here, for example, 2004 is the OU-1
8 explanation of significant differences. That was an EPA
9 action. In 2003 the OU-2, unilateral administrative order for
10 remedial design of OU-2 was issued by EPA. Its ROD was issued
11 in 2002. So this is a handy -- simplified, but I think handy
12 timeline of the major events, the regulatory events.

13 MR. FELMLY: If we can go to the next slide.

14 Q. Several of these obviously relate to tar, but let me go --
15 stay with that one for a second, because I want to -- although
16 they're, I suppose, photos showing things, are these photos
17 that you incorporated into this exhibit from photos that were
18 available from the site?

19 A. Yes, during the remediation. And the important thing
20 about a picture like this is that Mr. Effinger was saying
21 yesterday, or day before yesterday, that when you're on the
22 site remediating the soils, you can use visual observations to
23 know where you have to excavate. When you're past the tarry
24 zones, sometimes you have to confirm that with laboratory
25 samples. But not always, because sometimes it's very obvious.

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1 This photo is living proof of that. When you see the tar in
2 the soils and you're sitting there with an excavator, you know
3 that you have to dig that up. You don't have to wait to send
4 a sample off to the laboratory and wait two weeks to get the
5 result back and have the bulldozer sit there for two weeks at
6 expense. You know you have to dig that up. And as
7 Mr. Effinger said, EPA was standing there also saying yes,
8 you've got to go dig that up. So there was no question about
9 it. Much of the excavation in that area.

10 MR. FELMLY: Let's see the next slide, please.

11 Q. Now, I made a mistake the other day when I pointed out in
12 one of the questionings to Mr. Effinger about the tar removal
13 buckets, and that turned out to be the system of putting the
14 oxygen, Fenton's reagent in the ground. But this would appear
15 to be the way in which -- or a photo that shows the actual
16 DNAPL removal pumping system and the nature of the product
17 that they're getting out of the ground. Is that correct?

18 A. That's right. This is still going on today. I believe
19 that this hole in the ground is right in the gas holder, in
20 that -- in the city holder area, and there's a well that goes
21 down through that area to the bottom and pumps -- this is the
22 well and the pump, and pumps up the tar into this barrel here,
23 and this is the top view of what's being collected.

24 Q. Have you been out to the site and seen the layout? I
25 realize most of the old structures are gone, but have you been

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1 out to the site and looked at the locations and the various --
2 the relationships of where these things are?

3 A. Yes, I have. And we did spend some time on these
4 collection systems.

5 MR. FELMLY: If I could see the next slide.

6 THE COURT: Let me ask him something. We've seen two
7 methods of remediation; one is you dig it out.

8 A. Right.

9 THE COURT: Then one is you pump it out.

10 A. Right.

11 THE COURT: Now, how do you determine which to do?
12 It looks like if you could pump it all out, that would be a
13 much easier way to do it, just put a bunch of wells down and
14 pump it all out.

15 A. That's right.

16 THE COURT: But I guess you can't do that.

17 A. You can't, and the reason you can't is you could only pump
18 the mobile tar, the tar that's flowable. After you pump the
19 mobile stuff, you're still left with what we call residual
20 tar. And if you leave that residual tar in the ground, it
21 will take over a thousand years for that to clean itself.

22 THE COURT: But you pump the -- you pump what you can
23 and then you dig? Is that right?

24 A. Well, there's actually a debate about that. Generally if
25 I were designing a site remedy like this, if I could dig it

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1 out rather than pump it out, I would dig it out. Because in
2 the end, it's faster and it's cheaper.

3 It's very difficult to pump this stuff. It's very
4 viscous, you break the pumps, the -- it's just constant
5 maintenance. And it's a very very slow process, as we see,
6 because in some areas they're are forced to pump because they
7 can't dig because of the electrical substation, so they've
8 been forced to continue to pump this material, and it's taking
9 an extremely long time as a result. So you're better off just
10 digging it up and getting it out of there, if you can, if
11 that's practical.

12 BY MR. FELMLY:

13 Q. Okay. Dr. Shrifrin, again, just quickly on this, this is
14 just another timeline, I gather, that takes the information
15 and is more in a vertical fashion, and it gives just a
16 convenient way of keeping track of the events that took place?

17 A. Yeah, I think the -- couple of things here. The red stuff
18 is the important stuff, so as another quick reference to
19 what's going on here, the early contamination management, the
20 parking garage soils, Luden's, the NAPL delineation.

21 Let me just point out, I really struggled with how to lay
22 out the activities here, because this is actually a pretty
23 complicated site. It's a complicated site in terms of its
24 contamination, and it's a complicated site in terms of its
25 remediation.

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1 Q. What features factor into your view that it's a
2 complicated site in terms of the contamination?

3 A. In terms of the contamination, it's complicated because
4 there's multiple sources, there's at least six and probably
5 more, there's at least six sources of nonaqueous phase
6 liquids.

7 Q. Again, just so we're on the same page, because we've been
8 talking about the plant, what are the six sources that are
9 affiliated with the plant?

10 A. The six sources as identified in the ROD, several of which
11 have migrated beyond the plant footprint itself, so it's
12 complicated because there's multiple sources, it's complicated
13 because it's DNAPL. DNAPL sites are always the most
14 complicated sites for environmental control, because it's
15 almost impossible to clean them up.

16 It's complicated because there are multiple aquifers,
17 there's the upper aquifer and the intermediate aquifer.

18 It's complicated because groundwater is flowing in more
19 than one direction, it's flowing south toward the Calhoun
20 sewer, east towards the Cooper River.

21 It's complicated because there are redevelopment issues in
22 terms of getting out of the way for the redevelopment and
23 cleaning up as much as you can before and all that.

24 And it's complicated because there are structures at the
25 property that don't allow you to do the full remediation. The

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1 electrical substation.

2 So you have to back off and do as best you can, and that's
3 the whole nature of the phased approach and the TI, the
4 technical impracticability assessment that is looming in front
5 of this thing.

6 So I would say in the hundreds of sites I've dealt with,
7 this is in the top ten percent in terms of complexity.

8 Q. And what about the complication in terms of the
9 remediation that you mentioned was the other factor?

10 A. Well, the remediation has been complicated by the fact
11 that there's redevelopment going on. And EPA is always in
12 favor of redeveloping contaminated sites, as long as human
13 health and the environment can be protected. So there's that
14 interaction.

15 And then it's complicated because there's simply some
16 structures at the site that don't allow complete remediation.
17 I mean, I've seen MGP sites where there's nothing at the site
18 and the agency requires the entire site to be dug up just to
19 get rid of all that DNAPL. But that's not possible at this
20 site.

21 So that's the nature of the phased approach and the TI
22 assessment that's looming that do -- the essence of that, of
23 the agency's approach, which is a realistic approach, is do as
24 best you can, recognizing the redevelopment, recognizing the
25 DNAPL issues, recognizing the existing structure issues, and

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1 then we'll step back and assess what we're really going to do
2 here.

3 MR. FELMLY: Let's take a look at the next slide and
4 get into remedies.

5 THE COURT: What's the number of that last one?

6 MR. FELMLY: We're dealing with Exhibit 82, Your
7 Honor.

8 THE COURT: No, that wasn't 82.

9 MR. FELMLY: It's part of 82. It's a composite of --
10 all the slides that I've been showing in the last five minutes
11 or so and will continue to show a couple more are 82, and at
12 the end of that I'll move its admission.

13 BY MR. FELMLY:

14 Q. So we've got a drawing here that obviously deals with the
15 site and talks about remedies. In terms of what's being done
16 in remedies, what does this particular drawing teach us?

17 A. This is my attempt at simplifying that first big map that
18 you unfolded which has all the detail of each of the remedies.
19 It's just illustrative where brown is sediment remediation,
20 tan is sediment remediation. Brown is soil remediation, blue
21 is groundwater remediation, and the crosshatched orange is a
22 combination of soil and oxidation remediation.

23 Let me point out a couple of things here. These blue
24 areas that you see here are groundwater remediation, which is,
25 to date, either NC2 oxidation, and/or, for example, this area

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1 here is the phytoremediation.

2 So different versions, all short of what we call pump and
3 treat, which is another conventional remedy, would be to pump
4 the groundwater out of the ground and treat it. Although some
5 of that has been done, because as a matter of doing the soil
6 remediation and the NAPL remediation, the company has
7 collected about 3 million gallons of groundwater, and they've
8 treated that to the effluent standards.

9 The brown, for example, this area here represents the soil
10 remediation that was performed prior to the parking garage
11 installation.

12 One of the precepts of the ROD, both RODs, is that the
13 construction workers at this site, their health has to be
14 protected. And that's really been the cleanup standard that
15 has prevailed as a result of the baseline risk assessment.

16 So what the company has had to do is whenever
17 anticipating, whenever there has been construction anticipated
18 at the site, such as the parking garage, to meet this
19 performance standards of the ROD, they had to go clean up the
20 soils ahead of time to allow construction worker health and
21 safety.

22 In addition to that, the City did some of that work as
23 well. But both parties did that. So that's some of the
24 nature of the soil remediation. In addition to other browned
25 areas which are just NAPL excavations. Tar excavations.

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1 Which we heard, I think earlier, that a total of 63,000 tons
2 of soil have been excavated to remove tar.

3 MR. FELMLY: If we can go to the next slide, please?

4 A. Excuse me, can I add one more thing here?

5 Q. Oh, sure.

6 A. Another key feature is this here is a barrier wall that
7 was installed by the City when they replaced the Calhoun
8 Street sewer, which is the lower blue line. This entire
9 groundwater remedy was performed to deal with the migration of
10 contaminated groundwater into this sewer, and discharged to
11 the sediments and beach area of the Cooper River.

12 Q. So that barrier wall you're talking about, how deep is
13 that pounded down into the soil, do you know?

14 A. I don't know.

15 Q. But it's designed to get the surface groundwater and cut
16 it off from getting into that sewer.

17 A. It's designed to cut off the contaminated groundwater from
18 entering the bedding of the new sewer. And both the
19 replacement of the sewer and the bedding and the barrier wall
20 were all put in to deal with the transport of contaminated
21 groundwater to the sediments in the river.

22 The other element I would point out is this is where that
23 seep was that popped up a few years ago where a barrier wall
24 was put in here, and some soils were excavated.

25 Q. That's the Charlotte Street seep?

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1 A. Yes.

2 MR. FELMLY: Okay. Can we go to the next slide?

3 Q. This looks like the one that would be impossible to read
4 if I hadn't marked the bigger one.

5 A. That's right.

6 Q. All right. So this is the same information, but we've
7 marked it in more appropriate size to be able to be read.

8 A. That's right.

9 Q. We can move past that, you've talked about that other
10 document.

11 Then is this just a summary of the various actions that
12 have been taken, those performed by SCE&G and those performed
13 by the City that would be sort of consistent with what you've
14 put on the timeline as capturing the major events?

15 A. Yes. This is just a tabular form of that chart that we
16 just showed a moment ago.

17 Q. Just a summary?

18 A. Yes.

19 Q. And then last is a reference in your materials that talks
20 in terms of new work to meet performance standards. Just in
21 terms of this issue of when a remediation or a removal action
22 is underway, and the work is being done, and something else
23 seems to be needed by the agency, is that what this particular
24 slide deals with, and are you familiar with the orders that
25 bear on that?

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1 A. Yes. EPA made it very clear in its first ROD that the
2 remediation at this site was going to have to be phased. And
3 it was going to have to be phased for the reasons I mentioned
4 before. Because there's DNAPL, there are some areas that are
5 inaccessible, there's redevelopment, Brownfield's
6 redevelopment being performed on the site.

7 So EPA recognized at the very beginning that this was not
8 a final remedy. And that they were going to have to phase
9 their way through this.

10 As an example of that, it identified that there would be
11 this first operable unit, operable unit one as defined in the
12 first ROD, and then a second ROD would define a second
13 operable unit.

14 I should point out that sequential operable units are very
15 unusual. In my experience, when I've seen EPA design operable
16 units, their logical remedy elements, like for example,
17 sediments versus soils, or groundwater versus soils, or on
18 site versus off site, but all of those operable units are
19 defined up front. They're defined in a single ROD, this is a
20 remedy, this is a final remedy, and there are five operable
21 units and we're going to do the work in these units because
22 it's logical.

23 This is unusual in that the operable units, even the
24 operable units were phased in time. And that's consistent
25 with EPA's recognition from the beginning that they didn't

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1 know what the final remedy of this site was going to be. And
2 we still don't know what the final remedy is going to be until
3 the technical impracticability assessment is done.

4 And so this is some examples of how that phasing occurred
5 in 1999, EPA itself admitted there be may be additional
6 activities required. In 2002 it came up with a site-wide NAPL
7 removal plan. And in 2005 it finally came up with the OU-2
8 part of the plan. But even in 2009, it still doesn't know
9 what the final remedy is, because the ultimate five-year
10 assessment has not been performed, nor has the technical
11 impracticability assessment. And nobody knows what the
12 ultimate remedy.

13 And the two possibilities are basically dig up all the tar
14 and let natural attenuation clean the rest up, or some kind of
15 a containment system that says we can't dig up the tar, so
16 we're going to contain the groundwater and we're going to
17 contain the source areas, so it no longer contaminates off-
18 site areas.

19 And that's the kind of assessment. Now, EPA does not take
20 technical impracticability assessments lightly at all.
21 They're rare, they're -- they're more frequent now that about
22 two years ago EPA had an expert panel looking specifically at
23 DNAPL sites, concluding that DNAPL sites are almost hopeless
24 to clean up, because you just can't get it all out. And it
25 creates groundwater issues forever.

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1 Since that expert panel study, EPA is more amenable to
2 technical impracticability assessments where plan B has to be
3 designed, which is basically you're not going to get it all
4 out, you have to design something to contain it, so that you
5 can meet different performance standards.

6 Q. So the area that you're talking about containment on this
7 site would be what geography?

8 A. It would be especially the geography that -- where NAPL
9 continues to reside.

10 Q. In the substation area where they can't dig it out?

11 A. And possibly in the Fernoline area, if they haven't dug
12 some of that out.

13 The point would be that something will have to be designed
14 to demonstrate that groundwater no longer can continue to
15 migrate and contaminate new areas.

16 Q. And in terms of that kind of a structure, the thing that
17 would contain that, is that a barrier wall or a barrier wall
18 with some of the jet grouting that we heard Mr. Effinger
19 mention?

20 A. It could be that, or it could be simply a very strong
21 groundwater removal system where the gradients are reversed.

22 Now, that may not be practical at this site because you
23 have tidal influences at this site and a very shallow
24 groundwater table, and you may not be able to pump enough
25 water to create -- to reverse the gradients and create an

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1 inward gradient where you no longer allow any outward
2 migration.

3 It is possible that it would be a combination of barrier
4 walls and groundwater pumping. And probably will involve some
5 groundwater modeling to be able to predict that.

6 Q. So in terms of the fate and transport of these materials,
7 and based on all of your experience and training and your work
8 with MGP plants that you've discussed, and based on a
9 reasonable standard of scientific and engineering certainty,
10 the source or the principal source of the contamination that
11 is under cleanup here and is being worked on and has been for
12 many years, is what, in your opinion, based on all of what
13 we've seen?

14 A. The tar.

15 Q. And the tar came from what?

16 A. The gas plant. It came from leaks, primarily from leaks
17 in the equipment at the gas plant.

18 Q. And based on the analysis of the tar and fingerprint
19 description that you've presented evidence on today and the
20 data that is in the scientific report, and based on the years
21 when various types of tar were made, and the history of when
22 carbureted water gas tar began, and in light of the mixture of
23 the tar as is reflected on that data, do you have an opinion,
24 again based on all of your training and experience, as to
25 whether or not it is based on a reasonable degree of

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1 scientific and engineering certainty that some significant
2 portion of that carbureted water gas tar would be related to
3 the equipment operated during the 1910 to 1926 period when UGI
4 was involved with the plant?

5 A. There's no question in my mind that some of the tar in the
6 subsurface is from that period.

7 Q. And you've said a couple of times that there are various
8 studies and evidence as to when these vessels start to leak.
9 And I think in one sense you indicated it's quite quickly.
10 What again is the evidence for -- and we're talking about
11 something many years ago, but for historic structures of the
12 sort that were involved here, some of which had wooden bottoms
13 and masonry bottoms, how quickly, based on all of your work
14 and expertise, is the period when you're going to start to get
15 some leakage of this pollution into the ground?

16 A. Almost and sometimes literally from the day the plant
17 started.

18 I have done a survey of contemporaneous literature from
19 the 1870s to the 1970s, about leaks first at MGPs, and second
20 at chemical plants or plants where fluids are handled.
21 Including some of the modern studies such as the EPA 1986
22 U.S.G. study. And going back to 1870, there is technical
23 literature that proves that these -- the equipment, the tanks,
24 the holders at these plants leaked sometimes from day one.
25 And there's a reason for that.

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1 And I can speak on this both from my personal experience
2 as an engineer designing fluid-handling systems, as well as
3 from reviewing the literature.

4 First, you have shake down issues. When the plumbing of a
5 complex plant with many pipes, many joints, valves, pumps,
6 tanks, is built, until you put fluid in that system, you can't
7 be sure that it doesn't leak. And invariably when a system
8 like this is started up, and I can speak from personal
9 experience, unfortunately, you put the fluid -- you build the
10 thing as tight as you can, as best as you can, you have
11 plumbers come in, you do it as best you can, you fill it up
12 with fluids and you see leaks. Almost guaranteed. And you
13 maybe fix those leaks as best you can, but in the case of an
14 MGP, many of the leaks are underground, and you're not even
15 aware that they're occurring. And also unless they're
16 dramatic, unless they're huge, they may go on forever and you
17 just don't know.

18 Now, I have seen MGPs where the shake down leakage was so
19 large that the gas holder had to be shut down immediately, and
20 dug up and repaired. And I have photos of that. Photos of
21 the repair of the gas holder the year after it was installed,
22 with an eight-foot crack through the masonry holder.

23 But the shake down issues are severe, and that's why I
24 say --

25 THE COURT: I think you answered his question.

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1 BY MR. FELMLY:

2 Q. You're telling us you know something about this issue of
3 leaks and spills, and you've tried to become expert on it and
4 you --

5 THE COURT: I believe you can safely say that.

6 MR. FELMLY: Yeah.

7 Q. And you've got two big volumes here which we're not going
8 to mark in evidence, which you've been collecting, this is
9 something you've spent some time on, I gather.

10 Is it fair to say you've tried get your hands on
11 everything that's in the historic literature that's on the
12 leaks and spills for these plants?

13 A. We have spent hundreds of hours studying leaks and spills
14 from plants like manufactured gas plants. And although they
15 were never intentional, they occurred right and left.

16 MR. FELMLY: I'm about to move to a new issue, Your
17 Honor --

18 THE COURT: Let's take about 15 minutes.

19 (A recess was held at this time.)

20 MR. FELMLY: I've completed my portion of this issue
21 with Exhibit 82, and I would move that Exhibit 82, which are
22 those remedial response summaries and charts that we just went
23 through with Dr. Shrifrin, be entered as a full exhibit.

24 THE COURT: Any objection?

25 MR. VARON: Same situation, Your Honor, thank you.

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1 THE COURT: Without objection.

2 (Plaintiff's Exhibit 82 received).

3 THE COURT: I shouldn't say without objection. I
4 should say objection overruled. Just because he expresses an
5 opinion, doesn't mean the exhibit doesn't come in.

6 MR. VARON: I understand.

7 MR. FELMLY: Your Honor, if I could just address one
8 thing with you just to be clear that I'm doing this correctly.
9 I've been taking the issues of Dr. Shrifrin's expert testimony
10 sort one by one and developing the opinions, then moving on
11 the next area, rather than getting a whole summary of all of
12 them, as we talked about I would try to do it that way.

13 I'm going to move to the next area here, and will be doing
14 NCP compliance, and then discussing allocation issues that are
15 in the case and then control issues. And I just wanted to be
16 sure that that approach of taking those issues and asking him
17 the basis of his opinion, then asking the --

18 THE COURT: Sure.

19 MR. FELMLY: -- opinions would be okay, rather than
20 sort of fighting out the whole Daubert issue in a global way.
21 I understood that's how you prefer it.

22 THE COURT: That's fine.

23 MR. FELMLY: Thank you.

24 BY MR. FELMLY:

25 Q. So I'd like to turn to the issues --

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1 THE COURT: Different lawyers do it different ways
2 and some lawyers don't even do it. I mean, they come in here
3 and I have to tell them how to do it, because they don't know
4 how to examine their own expert. But this is fine.

5 MR. FELMLY: I appreciate that, but I'm also mindful
6 I'm a long way from home and I want to make sure I understand
7 how it's done.

8 BY MR. FELMLY:

9 Q. The question of NCP compliance or compliance with the
10 National Contingency Plan is what I want to talk with you for
11 a few minutes about, Dr. Shrifrin.

12 First, if you could tell the Court in what kinds of
13 contexts and what kind of engagements and experiences you have
14 developed experience and expertise with respect to the
15 provisions and procedures that are part of that process?

16 A. Well, I participated in some of the initial development of
17 superfund procedures. So to the extent that those are
18 memorialized in the NCP, you know, I had some role, for better
19 or worse, some role in designing some of the procedures that
20 the NCP calls for.

21 I have been a consultant on studies and remedies where we
22 had to demonstrate compliance to the NCP, so I had to be
23 familiar with the NCP as a practicing environmental engineer
24 consulting on the -- those kinds of activities. And in
25 addition to that, I have actually worked on some litigation

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1 cases regarding contesting whether something is compliant with
2 the NCP, where I've had to give expert opinions on the NCP and
3 the activities within that context.

4 Q. And so over what period of time approximately in terms of
5 your career both in terms of working as a consultant on
6 environmental remediation as well as litigation and working in
7 conjunction with the agency, how many years have you been
8 involved in sorting out and being familiar with the standards
9 that we're talking about under that category of NCP
10 compliance?

11 A. Almost 30 years. Now, I should point out that the NCP
12 that we operate under today was revamped in a major way in
13 1990. So in terms of the current NCP, it's really been the
14 last 20 years.

15 Q. In this case, as part of your engagement, have you, as you
16 went through all of these various analyses of the remedies and
17 the work that was done and the many years now of various
18 phases of remediation that have been undertaken, as part of
19 your engagement and based on that experience and your
20 knowledge and training, have you looked at and assessed the
21 extent to which the response costs incurred by SCE&G are
22 consistent with the National Contingency Plan?

23 A. I believe they're all consistent with the NCP.

24 Q. And just what's the process of how you have made that
25 assessment? What is the types of data and information that

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1 you draw on in order to essentially make that comparison or,
2 you know, indicate that determination?

3 A. The primary focus is guidance given by EPA in its 1990
4 preamble in its revision of the NCP, which states that the
5 purpose of the NCP is to guarantee a CERCLA quality cleanup.
6 And then it goes on to define what it means by a CERCLA
7 quality clean up.

8 It also goes on to define -- it being EPA -- goes on to
9 define why the NCP, why it believes the revised NCP guarantees
10 a CERCLA quality clean up, but at the same time notes that the
11 elements of the NCP don't necessarily have to be followed as a
12 cook book, so that the main purpose is the assurance of a
13 CERCLA quality cleanup.

14 So when I review studies and remedies in a case like this,
15 the predominant standard to which I compare, is, is this a
16 CERCLA quality cleanup.

17 And what does that mean? That means is the -- are the
18 studies consistent with what would be expected according to
19 EPA guidance. Are laboratory samples analyzed properly, are
20 samples analyzed properly, is the work done generally within
21 the expectations of the NCP, which means set out a work plan,
22 get agency oversight and perform the work in a cost effective
23 manner.

24 Q. Have you laid these various provisions that you've been
25 listing there, out in a summary or an abstract or a list to

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1 try to provide a convenient method to go through those?

2 A. Yes, I've listed actually the elements of the NCP, and the
3 evaluation standards that EPA uses from the NCP of
4 remediation.

5 Q. Why don't we bring up Exhibit 81, which is the
6 demonstrative or the summary that Dr. Shrifrin is referring
7 to, and see if we can do this more official. First of all,
8 this obviously sets forth some general purposes and general
9 requirements. When you talk about a CERCLA quality cleanup,
10 what are the principal objectives that the EPA is looking for
11 with those words?

12 A. Protect human health and the environment, and perform the
13 work in a cost effective manner.

14 Q. Okay. If we go to the next slide, then we can move right
15 through these. We can go to the third one here. And then the
16 next one.

17 Now, under NCP overview, does this area -- well, tell us
18 what this overview shows.

19 A. These are literally the sections within the National
20 Contingency Plan. The headings of the top that it deals with.
21 So it deals with worker health and safety, cost recovery,
22 documentation required for that, obtaining permits when you're
23 cleaning sites up, how to report releases, how to evaluate the
24 sites, initial removal actions, which are also called interim
25 removal measures. How to perform site evaluations, how to

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1 perform the major site evaluation and remedy evaluation which
2 is called a remedial investigation feasibility study, R-I-F-S.
3 And how the agency is to select remedial actions, and how to
4 implement the remedy, and it also provides a provision for
5 operation and maintenance.

6 Q. Does one of the aspects of the agency's selecting the
7 actions look to the evaluation of various alternatives,
8 perhaps ranking from a no build or do nothing alternative to a
9 much more intensive alternative?

10 A. That's right. And the NCP lays out nine criteria that the
11 agency is supposed to use to evaluate the various remedy
12 options.

13 Q. And in connection with the review that you've made of all
14 of the environmental documents here and what we've heard
15 Mr. Effinger talk about, the various stages of this and the
16 OU-1 ROD and the OU-2 ROD, have you reviewed all of those
17 documents with an eye towards whether or not those provisions
18 in those documents and the actions of the party doing the
19 cleanup conform to the NCP?

20 A. Yes.

21 Q. And in that regard, what is your opinion in light of these
22 standards and in light of your knowledge and experience with
23 this process, as to whether or not the actions of SCE&G and
24 the response costs that they've incurred are or are not
25 consistent with the National Contingency Plan?

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1 A. So far they do conform with the NCP. As we've noted
2 earlier, there is a phased approach, and there's more coming.
3 But presumably that also will be consistent with the NCP.

4 Q. And as you reviewed the document that we've had marked in
5 evidence, the OU-1 ROD and the OU-2 ROD and the ESD, have you
6 noted places in those documents where the EPA has actually
7 referenced that they're in conformity or the actions are in
8 conformity with the NCP?

9 A. Yes. Perhaps the significant one is the -- in the ESD,
10 the evaluation of significant differences, explanation of
11 significant differences, EPA says that all of the work
12 performed has been consistent with Section 121 of CERCLA,
13 which is the section that deals with ARARs, standard --
14 cleanup standards and cleanup methods.

15 Q. If we could go to the next line, please. So there's a
16 tie-in between this phrase NCP compliance and complying with
17 the statute called CERCLA?

18 A. They're hand in hand. In fact, the NCP was originally
19 developed for oil spills in the 60s or 70s. It was adapted to
20 CERCLA in 1990. That was the reason for the major revamping.
21 And since then the two are hand in hand. CERCLA is the law,
22 the NCP is the guidance for the regulations, and then EPA has
23 a string of regulations around the NCP in order to comply with
24 CERCLA.

25 Q. And is one of the regulations that is out there, one of

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1 the provisions that's out there, deal with something called
2 presumptive compliance?

3 A. Yes. In fact, the NCP specifically talks about that.

4 MR. FELMLY: Can we see the next slide, please?

5 Q. Is this the pertinent part of the provision dealing with
6 presumptive compliance with an EPA order?

7 A. That's right. What the NCP says is that it's not going to
8 second guess the agency. If the agency and the party has
9 developed an order, an administrative order, a consent order,
10 whatever, that any response in compliance with that is
11 automatically in compliance with the NCP. And as we know in
12 this case there have been numerous orders under which the work
13 has been performed.

14 MR. FELMLY: And then the last slide in this exhibit,
15 if you would, Denise.

16 Q. The EPA's nine criteria, these obviously look in many
17 respects like they may overlap what we saw before. But how do
18 we understand or how do these relate to this inquiry?

19 A. EPA has described these criteria as the first seven being
20 the fundamental criteria action, and eight and nine being
21 modifying criteria, I think they call them.

22 In a feasibility study, which is the report that is issued
23 where remedies are evaluated, remedy alternatives and
24 combination of remedy elements, EPA in its ROD, reviews all of
25 those elements in the context of these nine criteria, and

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1 literally the ROD has each one of these criteria, and says
2 here's how this remedy alternative applies to item one, item
3 two, item three.

4 Q. So if the EPA has issued a ROD, that goes through each of
5 these provisions, they are in that process going through the
6 NCP criteria?

7 A. That's right. And the rods for this site have these
8 criteria discussed.

9 MR. FELMLY: I'd ask that the materials here in
10 Exhibit 81, the summaries and the chart that he prepared there
11 be admitted as a full exhibit.

12 MR. VARON: No objection.

13 THE COURT: Without objection.

14 (Plaintiff's Exhibit 81 received.)

15 BY MR. FELMLY:

16 Q. Exhibit 29, Dr. Shrifrin, is a governmental document, it's
17 a O-S-W-E-R directive, directive number 9203, describing
18 exercising flexibility through the superfund accelerated
19 cleanup model. And I think that has one of those acronyms
20 called SACUM, is that right?

21 A. SACUM.

22 Q. What is the SACUM program and how does it bear at all in
23 terms of a project like the one here in Charleston?

24 A. In the -- I believe it was the mid 90s, as the
25 Brownfield's program started picking up steam and the issue of

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1 redeveloping contaminated properties so that they could be
2 useful once again, became an issue throughout the country.

3 EPA felt that perhaps CERCLA could be hindering that, and
4 the NCP, because it could -- CERCLA could be interpreted and
5 managed as a very onerous process. Many -- many elements to
6 be complied with. And actually the statistics are that a
7 typical CERCLA site takes about 20 years to be cleaned up,
8 because of how onerous it is.

9 So in the mid 90s Assistant Administrator Clay, basically
10 as the spokesman for the agency, developed this accelerated
11 process called SACUM, which was intended to not let the beast
12 get in its own way. And it emphasized that if there are ways
13 to shortcut this, if there are ways to get right to the
14 cleanup, to clean up certain elements, to bypass certain
15 requirements of CERCLA, it could be done under the SACUM
16 process, as long as the fundamental tenets of superfund were
17 not violated. Meaning CERCLA quality cleanups.

18 So the whole purpose of the SACUM process was to allow
19 things like what went on in Charleston to actually happen. If
20 an Aquarium needed to get built, if a tour boat facility
21 needed to get built and you had a contaminated site nearby, go
22 ahead and get these things done and don't let the process
23 stand in its way, as long as at the end, the cleanup was
24 CERCLA quality.

25 MR. FELMLY: Denise, if you could bring up or zoom up

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1 on the second -- the lowest paragraph in the letter, the memo.

2 Q. So this is the assistant administrator of the EPA at that
3 time urging regional personnel to take full advantage of the
4 flexibility that the NCP offers to streamline the program, to
5 provide risk-based cleanups at the greatest number of sites.
6 This could include development of consolidated site
7 assessments, the early start-up of remedial investigation
8 feasibility studies at likely NPL sites and so on.

9 This is the type of encouragement --

10 THE COURT: Yes, sir.

11 MR. VARON: Your Honor, I'm sorry to interrupt, but
12 my understanding is that Mr. Effinger said this process didn't
13 apply at the site, and so I'm wondering what the relevance is.

14 MR. FELMLY: I didn't hear him say that. I don't --
15 I did not know that he said that. I don't think it does, but
16 I can ask Dr. Shrifrin if he believes it applies.

17 THE COURT: Sure.

18 BY MR. FELMLY:

19 Q. Did the considerations that are applied in the SACUM
20 program, to your knowledge, apply at the site where the
21 various redevelopment things were going on?

22 A. Absolutely. And I actually think Mr. Effinger said the
23 opposite.

24 MR. FELMLY: Okay. The record will tell us.

25 MR. VARON: The record will show us, thank you.

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1 BY MR. FELMLY:

2 Q. In what way do you believe that these concepts of these
3 flexibilities would apply?

4 A. The issues at Charleston fit exactly within the context of
5 the SACUM memo. There was redevelopment looming, there was a
6 contaminated site that needed to be cleaned up. CERCLA
7 quality needed to be maintained. It was a risk-based cleanup,
8 but let's not get in the way of the redevelopment, and in
9 fact, anything that needs to be done, as long as it's
10 consistent with the ultimate cleanup, just go ahead and do it.
11 That's precisely what SACUM is about.

12 Q. And in connection with the work that was done by the City
13 and the use of the \$26 million that my client paid to the
14 City, do you have an opinion as to whether the use of those
15 funds would have been within the NCP?

16 A. Yes, they were. From my understanding, in reading
17 Mr. Livingston's testimony, who --

18 MR. FELMLY: Let me just identify, he's the witness
19 from the City who has been deposed in this case and who I
20 represented to the Court would be testifying later.

21 A. Right. He explained in his testimony how that -- the
22 money that was spent, the \$26 million was spent precisely for
23 these kinds of items, cleaning up contaminated soils in order
24 to protect construction workers so that they could go ahead
25 with the construction.

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1 THE COURT: Now, we've heard a great deal about the
2 oversight of EPA as far as the plaintiff's attempts to clean
3 the site up.

4 A. Right.

5 THE COURT: And the fact that they did the initial
6 investigation and came up with plans and then they were
7 approved and then they proceeded to try to clean the site up.
8 Now, what about the City of Charleston's attempts at
9 remediation on its property? Did they have to satisfy EPA?
10 Do we have similar documents to what were generated in
11 connection with the plaintiff, being generated in connection
12 with the City's cleanup?

13 A. I haven't seen documents that -- ahead of time. But I
14 think the important document is the first ROD where EPA
15 acknowledges all that activity by the City. And --

16 THE COURT: As having been done?

17 A. As having been done. And --

18 THE COURT: Did they inspect it?

19 A. It's not clear from the ROD whether they inspected it.
20 But from the ROD it is clear that they were very aware of it.
21 And also they did not -- in the ROD they were accepting. They
22 referred to these things as additional activities.

23 THE COURT: Did you ever see an EPA accept something
24 without inspecting it? I mean, that's not the reputation they
25 have, I mean, maybe it happens.

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1 A. It's not, but it is consistent with SACUM. It is
2 consistent with this Clay memo, that if other activities are
3 necessary for Brownfield's redevelopments, go ahead and get
4 them done, as long as in the end everything is consistent with
5 the CERCLA quality cleanup.

6 THE COURT: Go ahead.

7 MR. FELMLY: Your Honor, I'd move that the Clay memo,
8 which is Exhibit 29, the SACUM memo be admitted as a full
9 exhibit, it's a governmental document.

10 MR. VARON: No objection.

11 THE COURT: Without objection.

12 MR. VARON: Well, actually, Your Honor, pending
13 whether we can find the testimony of Mr. Effinger, I guess I
14 do have a relevance objection, but it will either be --

15 THE COURT: Well, I don't know that his testimony
16 controls this witness' testimony. This witness has said he's
17 examined the documents, he's examined the deposition, and it
18 was applied in this case. I mean, they may disagree.

19 MR. VARON: Okay.

20 (Plaintiff's Exhibit 29 received.)

21 BY MR. FELMLY:

22 Q. What I would like to now turn to, Dr. Shrifrin, is an
23 issue related to the amount of tar that you calculated as most
24 probably created or produced on this site, as well as an
25 analysis in the event that the Court gets to the issue of

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1 allocation in this matter, that would enable the Court to have
2 information and the benefit of your expertise on approaches to
3 that.

4 MR. FELMLY: I mean, I'm mindful, Your Honor, that
5 that is sort of a second stage of this case, but it struck me,
6 I mean UGI has made an allocation counterclaim. My intention
7 while Dr. Shrifrin was here, was to present that evidence for
8 the benefit of the Court, in the event you get to that issue.

9 THE COURT: Okay.

10 BY MR. FELMLY:

11 Q. First of all, on the question of the production of tar or
12 the amounts of tar, have you done a -- you presented a summary
13 chart that would identify the amount of gas production, and
14 have you done studies to assess how much tar was likely
15 produced during the period of time that this plant operated?

16 A. Yes, both tar and gas.

17 MR. FELMLY: All right. If we could bring up those
18 summaries on page -- on Exhibit 79, please. And we'll go to
19 the first slide.

20 Q. First of all we'll get numbers out, then I'm going to ask
21 you how you figure this stuff out.

22 With respect to total plant production, you're talking
23 about an estimate that takes the plant from the first day in
24 1885 when it opened, until the lights were turned off in the
25 1950s?

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1 A. Right.

2 Q. And with regard to that, you've indicated that you have
3 estimated or determined from the available data, an amount of
4 total gas production in billions of cubic feet of what?

5 A. 21.4 billion cubic feet of gas was produced by the -- this
6 plant over its hundred year history.

7 Q. Now, what's the principal methodology or the steps you
8 take, and what data did you use in order to come up with that
9 calculation or to compile that data to come up with that
10 calculation?

11 A. After the year 1887, there generally are data for gas and
12 tar -- sometimes tar -- production, in the forms of a journal
13 that was published called Brown's Directory of Gas
14 Manufacturing Facilities, I think it was called. We call it
15 Brown's Directory, or Brown's.

16 Brown's started publication, I think it was 1888, and
17 annually reported production figures, as well as other
18 information, on a yearly basis, based on data supplied by the
19 companies themselves. So from that date on, we routinely go
20 to Brown's and collect those data year by year.

21 In addition to that, there are a couple of other sources.
22 Sometimes the gas company records themselves survive, such as
23 board minutes or accounting ledgers, where we are able to find
24 data on tar and gas production. We use those data.

25 And then also after a certain period of time gas utilities

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1 were required to report annually to the public utilities
2 commissions in the states. And they provided gas production
3 data there. So sometimes we're able to find those records and
4 use gas production. So basically internal records, public
5 commission reports, and Brown's directories are our sources.

6 Q. But that data for those three sources is all something
7 that would have been reported as actual measured results from
8 the plant?

9 A. That's right.

10 Q. And with respect to the years in question here, and I am
11 mindful you mentioned that that data source or the
12 availability of that didn't start in '55, 1855, but sometime
13 in the 1880s, do you have it thereafter for this plant from
14 the 1880s on?

15 A. Yes. We have Brown's data, I believe continuously from
16 their initial publication on to the time the plant closed.

17 Q. So is Brown's essentially a commercial system or
18 commercial publication that serves the information needs of
19 the gas industry?

20 A. You could view it as a trade journal.

21 Q. And in terms of applying that here, that would account for
22 the years 1885 or '88 or whatever you said, to the time when
23 the plant closed, and then there's a little period of time
24 that goes back to the 1850s?

25 A. Right. And we have ways of estimating. Standardized ways

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1 of estimating those gaps years.

2 Q. And just so the Court understands what goes into that,
3 what are the ways in which you have the data from 1880
4 something up till 1950, whatever year it was in the 1950s, how
5 do you interpolate or extrapolate or whichever it was?

6 A. We do both. Where extrapolation is estimating beyond your
7 latest data point, and interpolation is estimating between two
8 data points. For the early years typically at plants we base
9 our extrapolation on the notion that plants slowly grew in
10 their service area. And we have information that confirms
11 this for various plants. And a plant may start by serving a
12 thousand customers, and in five years serve 2000 customers.
13 So it makes sense to do what we call a straight line
14 extrapolation from the first year of data, which in this case
15 was 1860, actually, back to the beginning of the plant.

16 And we have done this on numerous plants, and then found
17 new data and have -- it relatively confirms, to a reasonable
18 degree of certainty, confirms that it's an accurate way of
19 doing it.

20 And even in this plant actually we had a case where we
21 caught a new data point after our extrapolation, and our new
22 data point was, I think, within ten percent of the original
23 estimate.

24 So we do a straight line interpolation back to day one
25 from the first data point. And then where we have a gap of

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1 data between two years of data, we do what's again a straight
2 line interpolation, we assume that the difference is half of
3 the sum of the two.

4 Q. Now, in terms -- that takes us through the discussion of
5 how you can get your estimate or your best estimate possible
6 on the data of gas production over the years of the plant.
7 What's the process of trying to determine the approximate
8 total amount of tar that would have been produced during those
9 years of operation?

10 A. In -- for some cases we have surviving records. Brown's
11 sometimes reported gas made, sometimes reported gas sold.
12 Sometimes both. In the case of Charleston, that was done in
13 Brown's for a total of, I think, eight years.

14 Q. Are you talking about gas or tar?

15 A. Tar.

16 Q. You said gas.

17 A. I'm sorry, tar. In addition, we sometimes are able to
18 find accounting ledgers where we literally see the
19 month-by-month gas sales. And we found a few of those years
20 here in Charleston. And sometimes as a third source of data
21 we see reporting to the utilities commission, tar sales.

22 And the reason the tar sales were reported to the
23 utilities commission is it was often a significant source of
24 income to the plant, and in terms of rate setting. The
25 utilities commission needed to consider not only gas sales,

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1 but also by-product sales.

2 Q. So in this case, the amount of tar production records was
3 nowhere near as extensive as the amount of gas production
4 records?

5 A. That's right. There actually ends up being not a lot of
6 years for tar production. In the missing years, we scale tar
7 production off of gas production. As I mentioned yesterday,
8 the general rule of thumb is one gallon per thousand cubic
9 feet of coal gas production, and a half gallon per thousand
10 cubic feet of carbureted water gas.

11 We have confirmed that number as being relatively
12 accurate, when we have actual data.

13 Q. And in terms of your experience in cases where allocation
14 is involved in these kinds of principles have been discussed,
15 have you presented to courts the information based on gas
16 production data or the attempts to calculate the tar data
17 based on gas production? Is that a methodology you've
18 provided testimony on previously?

19 A. I have. In some cases when the facts point to using it,
20 we've used gas, we've used tar, we've used time. In this case
21 I would recommend using gas, simply because there's more data.

22 Q. If the issue is that multiple parties had periods of time
23 of involvement in the plant, and you know the years of those
24 involvement, what would be the benefits and the disadvantages
25 of simply looking at the years and the calendar and doing it

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1 on a basis that simply divided up the years in a pro rata or
2 proportionate basis?

3 A. In most cases gas is better, because as the years go on,
4 gas production typically increased at plants. So I would
5 rather scale an allocation off gas production, if it changed
6 through time, which it did here in Charleston, for example,
7 rather than just straight years.

8 Q. And if you had very good or lots of tar data, tar might be
9 a suitable proxy or surrogate for the gas production data?

10 A. It could be. As I've said earlier, the cleanup is being
11 required because of tar, so in theory, tar production would be
12 a reasonable allocation factor.

13 There is an element to it that confuses it a little bit,
14 and that's because we're talking really about surreptitious
15 tar at a site like this.

16 Q. What does that mean?

17 A. The tar that the -- the 14.1 million gallons is really
18 based on tar that is in the accounting system. Either because
19 we used the rule of thumb and make estimates and fill in
20 blanks, or we use actual data.

21 The tar that's in the ground at a site like Charleston, is
22 tar that leaked out of tar-holding vessels that never really
23 got into the accounting system.

24 Q. They didn't know it was happening?

25 A. They didn't know it was happening, so they couldn't

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1 account for it. So it's not really -- it's not necessarily
2 the 14.1 million gallons.

3 Now, the point is it may or it may not be, because the way
4 we do it, we try to scale up not gas sold, but gas produced.
5 And we have a way of doing that. And the tar generation,
6 whether it's in the accounting system or not, is probably best
7 scaled off the gas produced, not even the gas sold.

8 So if you scale it off, if you use gas sold as an
9 allocation factor, you're more likely to take into account the
10 surreptitious tar as well as the accounted for tar.

11 MR. FELMLY: If we could go to the next slide,
12 please.

13 Q. This describes categories of information under the
14 category Charleston gas production, and it obviously breaks
15 the period of ownership and operation down into various
16 periods. Perhaps you can explain for us and the benefit of
17 the Court what this denotes or what information is contained
18 here.

19 A. Using the method I just described a moment ago, we
20 calculated the gas production throughout the entire history of
21 the plant, as well as within time periods of the plant. And
22 during the UGI period, 1910 to 1926, 4.9 billion cubic feet of
23 gas were produced, which is 23 percent of the total.

24 Q. And based on the experience you've had and the work you've
25 done in connection with allocation and the nature of the data

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1 you were working with here, including having much more data
2 with the gas production than you had with tar, do you believe,
3 based on your education, training and experience, that the
4 calculations set on the platform or standard of gas production
5 that are reflected here, to a reasonable degree of certainty
6 or probability, provide the best way to provide such an
7 allocation for benefit of the Court?

8 A. Yes, I believe these numbers are reasonably certain, and I
9 believe that this is the right approach, right framework for
10 an allocation would be gas production in this case.

11 Q. And if I could go to the next chart in this exhibit. This
12 portrays it in a little bit of a different way, and there's a
13 reference to sort of a claimed orphan period. There's a
14 period of time in this chart where there is no apparent
15 company that is in existence -- I believe my opponent has
16 indicated that they don't dispute that that period is the
17 orphan, or an orphan period -- but you're, in this chart,
18 showing the differences for the UGI period in the same
19 relationship that the previous chart showed?

20 A. That's right. This is identical to the tabular form, it's
21 just a visual form to give you a sense of the relative scale
22 of each period in terms of gas production.

23 Q. And the last document, if you could bring it up, I think
24 just provides a little more detail on this. We've been
25 talking about the differences between data and estimates, and

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1 does this chart break down the components that come in this
2 case from that situation? Or that analysis?

3 A. That's right. We tried to be very clear here by
4 developing this chart in terms of allowing someone to
5 understand how much of that earlier estimate is based on real
6 data, versus our estimates as according to the method I
7 described earlier.

8 In this case, during the UGI period, about two-fifths of
9 the gas production is estimated. I have a high confidence in
10 that estimation approach, but this just lays out what's
11 estimated and what's based on actual data.

12 MR. FELMLY: Your Honor, I'd offer Exhibit 79 as a
13 full exhibit for the benefit of the Court, if the allocation
14 issue is reached by the Court.

15 THE COURT: Any objection?

16 MR. VARON: No objection, Your Honor.

17 (Plaintiff's Exhibit 79 received.)

18 BY MR. FELMLY:

19 Q. One last thing, Dr. Shrifrin, you've been talking about
20 the Brown's data, and that being something of a trade journal.
21 Just so the record is complete, and if the Court were
22 interested in it, is Exhibit 164 a series of excerpts of the
23 Brown's Directory data for the Charleston -- including the
24 Charleston gas plant that your office has pulled together out
25 of your records?

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1 A. If I remember right, I believe it is. And the excerpt,
2 the nature of the excerpt is that we just took out the page
3 that related to Charleston. These documents are like an inch
4 thick or so, and have all the plants across the country, and
5 that's just an excerpt of the year by year for Charleston.

6 Q. So these would be pages that would reference Charleston,
7 and in many cases other plants, but at least it's that portion
8 of the book where Charleston appeared with the data that
9 Brown's is recording for -- under the many years that are
10 involved here?

11 A. Right.

12 MR. FELMLY: And I'd offer Exhibit 164, Your Honor,
13 as the Brown's directory, Charleston excerpts.

14 MR. VARON: No objection, Your Honor.

15 (Plaintiff's Exhibit 164 received.)

16 BY MR. FELMLY:

17 Q. What I would like to turn no now, Dr. Shrifrin, is a
18 different topic. Specifically I'd like to turn to the various
19 opinions that you may have with regard to UGI's involvement
20 and indicia of control or actions of control that beared on
21 the Charleston MGP, and in particular in the area of your
22 expertise. And let me ask you that -- first, turning to that
23 question, whether based on your education, your training, your
24 experience in engineering and environmental science, based on
25 all the data that you've reviewed here and have discussed with

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1 us and the Court, based on your understanding of the facts
2 with respect to the operation of the plant, and also the
3 analysis that included the environmental conditions that
4 you've been discussing, do you have an opinion based on a
5 reasonable degree of engineering and environmental science
6 certainty, whether UGI in its management, direction and
7 control of the Charleston MGP, was in a position of such
8 control and management and direction, including with respect
9 to the operations that are related to the pollution that is
10 being remediated at the plant?

11 MR. VARON: Objection, Your Honor. This goes to the
12 heart of the Daubert motion that we've talked about
13 previously.

14 THE COURT: I don't think there's any need for me to
15 repeat myself. I've expressed my feeling about it, I've
16 expressed my feeling about his qualifications. I think in
17 addition to that, and again, I won't get a complete grip on
18 this situation until I become as familiar with the case as you
19 folks are. And I haven't reached that point yet. And the
20 law. But it seems to me it also involves a legal conclusion.
21 I think the wording control may be a word that has a legal
22 meaning in this case, as well as a lay meaning. And to the
23 extent that he may be expressing a legal opinion, I think that
24 may be objectionable on that ground as well.

25 But it is a nonjury case, and in nonjury cases, as I've

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1 stated several times, I like to hear the testimony. And we
2 try some patent cases occasionally, and patent lawyers always
3 want to call lawyers as witnesses. And more often than not we
4 try those cases nonjury, even though a jury demand will
5 produce a jury.

6 But in those cases I'm always interested in hearing what
7 the lawyer witness is going to testify, even though obviously
8 he can't testify, just to see what his thought processes are
9 and how he arrives at his conclusions. And sometimes it
10 points out to me how stupid the lawyer is, sometimes it points
11 out to me how smart he is. But in any event, it gives me some
12 guidance, and I think this testimony may be helpful in that
13 regard.

14 But just because I'm hearing it, that doesn't mean that
15 I'm going to swallow everything he's saying, hook, line and
16 sinker, because it comes with a lot of reservations about its
17 admissibility. But with that said, I'm going to overrule your
18 objection and hear the testimony.

19 MR. FELMLY: Thank you, Your Honor.

20 Q. So the question is, have you come to opinions on that
21 question?

22 A. Yes.

23 Q. And you understand, or at least I'll make it clear, I --
24 as it relates to the word control, which the Court has
25 mentioned, I'm not calling for a legal opinions, I fully would

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1 agree you're not a lawyer and you wouldn't give them. So as I
2 ask you to express these opinions, Dr. Shrifrin, I'm very
3 focused on asking you from the context of the way a
4 manufactured gas plant runs on a daily basis, the indicia and
5 actions of control that would be involved and which you may or
6 may not see in the evidence we're going to talk about. And
7 that's going to be the focus, and I gather you understand
8 that?

9 A. I understand that.

10 Q. Okay. So before we get into all the details, can you, in
11 a summary way, provide first what your opinion is with respect
12 to that control, and the principal basis of it, and then we
13 will take that apart and look at the evidence that you
14 indicate you formulated it based on.

15 A. My opinion is that UGI did control the operations of the
16 Charleston plant. And there are many examples supporting that
17 opinion, from review of their control over equipment, the
18 construction of equipment, construction of the plant, the
19 reconstruction of the plant, the expansion of the plant. From
20 my review of the way they controlled staffing of the plant,
21 staffing of the operations people of the plant. The people in
22 charge of the operations.

23 From my review of how they controlled literally every
24 aspect of the operations from a centralized viewpoint of the
25 Philadelphia board committees. How they inspected the plant

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1 from an engineering standpoint, not from an accounting
2 standpoint, which would be a business issue. Their -- from --
3 from my inspection of their engineering and operation notes,
4 which was a proprietary series of documents specifically aimed
5 at informing the technical people, the engineers and operators
6 of the plants how to operate those plants. Their control over
7 by-products and waste.

8 And finally, their control over their centralized approach
9 to purchasing raw materials, which to the extent that raw
10 materials made gas and gas made tar, directly has an impact on
11 the tar generation and the tar leakage at this plant.

12 Q. Well, let me start with the first thing you mentioned.
13 And we did a little discussion of this yesterday, but I'd like
14 to address it in greater detail. Exhibit 157 is a composite
15 of exhibits, of examples of UGI's control over equipment,
16 design and installation, summary sheet and notebook of source
17 materials. And we've taken the summary sheet out, as I
18 discussed yesterday.

19 MR. FELMLY: I might also add, Your Honor, we have
20 gone through and stapled these composite exhibits together, or
21 put several of the really large ones in notebooks, so that
22 hopefully the ones that are the Court's official record -- we
23 haven't stapled every set in the courtroom, but I think we got
24 the ones that you need that will hopefully hold together
25 better.

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1 And also I should say I'm working from a copy that looks a
2 little more disorganized than what you've got with various
3 stickies on it.

4 And I believe -- correct me -- Exhibit 157 was in.

5 BY MR. FELMLY:

6 Q. So let me take you through some of the entries in there
7 that bear on this, and ask how they may bear on it.

8 The first of the documents I want to address with you is
9 not in the computer because it is extremely large, it is a
10 plan, or perhaps you can tell me, these are materials you
11 pulled together, this would appear to be the plan of the gas
12 works that -- although the date on this indicates that the
13 plan was in 1929, I want to reference the note.

14 MR. FELMLY: And if we could go to the ELMO, or the
15 overhead camera here, and if we could put this up in that
16 fashion --

17 Q. Dr. Shrifrin, I'm displaying on the overhead video camera,
18 a note which is on this very large drawing. Is there any
19 significance on the note in terms of your opinion that UGI was
20 involved in the process of designing and building the plant
21 that was put there in 1911?

22 A. There's no question in my mind that UGI built and designed
23 this plant. And that this 1929 drawing pretty much represents
24 the plant through the period. We don't have any documentation
25 that suggests that there were any radical changes to the plant

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1 after 1926. And the fact that this plant, this drawing, 1929,
2 notes on it that it was traced from a UGI drawing, indicates
3 to me that more or less this is the plant that UGI operated.

4 Q. Well, in terms of the date that it was drawn, am I reading
5 this correctly, that this was August 8th, 1910?

6 A. Right.

7 Q. So this is right at the time when UGI is coming in and
8 building the plant?

9 A. And this confirms that the design of the plant was their
10 design. It's a UGI engineering drawing.

11 Q. Well --

12 A. Or says it was traced from a UGI engineering drawing.

13 Q. Well, that may be completely obvious to you as an
14 engineer, but why is it that the fact that this is a 1929
15 rendering of the sort of as built plans, which references it
16 come off an August 1910 design, connect the dots for me. Why
17 does that mean that UGI is the party that designed these
18 various structures and their configuration?

19 A. This, as opposed to what you see in a Sanborn map, this is
20 what we would call an engineering drawing. It has piping, it
21 has flanges, it has pumps, it has all the connections to all
22 the tanks, all of the equipment listed. And the reference to
23 a UGI drawing -- I don't -- as an engineer, I don't see that
24 UGI would have drawn this plant -- that diagram, if it wasn't
25 part of its design.

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1 Q. There's a variety of historic documents that are in this
2 composite exhibit, we're not going to talk about all of them.

3 THE COURT: I'm not sure I understand what he's
4 saying. You say that you're not sure they would have drawn
5 that plan if it were not part of their design? What do you
6 mean? You know what plant was built, right?

7 A. That's right.

8 THE COURT: And this represents that same plant?

9 A. Yes.

10 THE COURT: So the last statement you made, I don't
11 understand why you made it, sir.

12 A. What I meant was there would be no reason for UGI to make
13 such a drawing, if it wasn't part of -- if they hadn't
14 designed the plant. In other words, an engineering firm in
15 Kansas City wouldn't make such a plan, unless it had been
16 hired to design and build the plant.

17 THE COURT: Okay. I haven't seen the plans; does it
18 show UGI on there?

19 MR. FELMLY: Oh, yeah. The note that I was putting
20 on the ELMO, Your Honor, says that this plan was traced from a
21 print of a drawing from UGI that was made in the summer of
22 1910, when essentially UGI was building the plant. So this is
23 a tracing of that document.

24 BY MR. FELMLY:

25 Q. Maybe I'm belaboring the obvious, Dr. Shifrin. You're

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1 saying somebody doesn't go to the trouble of drawing an
2 engineering drawing like this for artwork or for something
3 else. This was a functional drawing that was done as part of
4 an engineering plan.

5 A. That's right. And it's also consistent with other
6 documentation we have, that this was precisely the time when
7 the plant was being built.

8 THE COURT: And it was built pursuant to those
9 drawings.

10 A. It was built according to that drawing.

11 THE COURT: Did they have building permits back then?

12 MR. FELMLY: I don't know.

13 THE COURT: They didn't?

14 MR. FELMLY: I don't know.

15 THE COURT: I don't know.

16 MR. FELMLY: I don't think we checked on it, Your
17 Honor.

18 THE COURT: If they had them anywhere, they probably
19 had them in Charleston.

20 MR. FELMLY: Let me ask you to bring up exhibit --
21 actually the second sheet. I'm going to move, Judy, to the
22 laptop again. And I'll bounce a little around on that for
23 these oversized documents. If -- Denise, this is from the --
24 the part I want to focus up on is over on the right side here.
25 It discusses this process.

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1 MR. VARON: What page are we on with Bates stamp.

2 MR. FELMLY: It's 001952. This is out of a history
3 book with respect to the area and the community. It actually,
4 I think, was referenced or out of one of UGI's processes.

5 BY MR. FELMLY:

6 Q. But what I'm interested in is the reference that is here
7 where it says the holding company had come to the aid of the
8 local company, the combination of ample financing ability and
9 engineering expertise resulted in the construction of a new
10 modern and efficient plant supplanting the inefficient and
11 obsolete plant.

12 Again, in terms of the efficiency that came to pass and
13 the type of plant that --

14 THE COURT: This came from where?

15 MR. FELMLY: I believe this came out of -- I can tell
16 you precisely in a moment.

17 THE COURT: Okay, that's all right.

18 MR. FELMLY: I believe it came out of one of UGI's
19 histories. I think these are their words, but I'm stopping
20 just short of swearing that.

21 MR. VARON: I believe it's a corporate history of
22 SCE&G.

23 MR. FELMLY: There are a variety of corporate
24 histories. It may be in the SCE&G one.

25

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1 BY MR. FELMLY:

2 Q. In any case, my question to you, Dr. Shrifrin, is in terms
3 of this being a modern new plant, I mean what's your view on
4 that? Is this something that is truly conforming to that
5 description when they come and build it in 1910?

6 A. Oh, yeah. At the time, this was hot news. I mean this
7 was -- would have been the most advanced plant design in the
8 United States.

9 Q. And at the time in 1910 when these events are occurring,
10 and I realize UGI has been formed back in the 1880s and in
11 existence for some period of time, you've spent a lot of time
12 studying UGI; can you explain to the Court the relative
13 technologic position or prominence that UGI had in the gas
14 industry at that time in 1910?

15 A. By 1910 UGI was clearly a leader in the field of
16 manufactured gas. They had been installing carbureted water
17 gas plants for 20 years by that time. They had been running
18 them around the country for that period of time. And they
19 were also even moving into -- into alternate coal gas
20 manufacturing designs by that time. They were developing
21 by-product residual applications. They invented this
22 road-tarring material called Ugite, they had numerous
23 subsidiary companies that fed into the manufactured gas
24 process, such as the company that made gas mantels for gas
25 lighting. Construction companies, laboratories for testing

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1 the quality of gas and the quality of the residuals. They had
2 every angle covered by this period of time.

3 Q. So in leaving aside the question of whether they did
4 control, in terms of the ability of this organization, UGI, to
5 manage the day-to-day affairs in the operating sense of gas
6 plants, what's your knowledge of that?

7 A. They clearly had the ability. They had a thorough
8 understanding -- not only a thorough understanding, but they
9 were actually leaders in most cases. And in their own words,
10 in their histories, they describe this. This is analogous to
11 what I said yesterday, that if you want a race horse, you
12 could be an investor and not know anything about horses, but
13 if you know how to train a horse, you have the ability to
14 train, define the training of that horse. UGI had the ability
15 to control anything in any gas plant in the United States.

16 MR. FELMLY: Let me move to the next slide, if I may,
17 Denise. This document is entitled, and if you could zoom up
18 the top portion, inventory of all estates and property, real
19 and personal, belonging to the Charleston Consolidated Railway
20 Gas and Electric Company, and other companies.

21 MR. VARON: You have to give us some indication of
22 where it is in the exhibit, because we can't find it.

23 MR. FELMLY: It is 37018 are the last four digits.
24 BY MR. FELMLY:

25 Q. Now, this inventory, and if we could skip to the next page

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1 just to get an idea of what is presented here --

2 MR. FELMLY: Do you only have the first page, Denise?
3 Or do you have the second page? All right. Let me ask, Judy,
4 if you would be good enough to put me on the ELMO, because I
5 only have the first page and I want to show just briefly what
6 the contents of this include.

7 Q. If you go to the interior pages of this document, the
8 inventory, what is depicted here, what are they inventorying
9 here in this time period at the outset of the lease
10 arrangement as they discuss it. This is dated June 21 in 1910
11 and that summer of 1910.

12 A. The inventory included the entire plant, literally right
13 down to the shovels and the hose and all that stuff at the
14 plant. On this page inside of a coal shed at the plant was a
15 tar -- two tar wells and a tar extractor. And what this
16 demonstrates is as a result of that inventory, all of the tar-
17 handling equipment, in fact everything at the plant was
18 totally defined.

19 Q. And if we go to the page --

20 THE COURT: That first page had the name of a gas and
21 electric company, and it said to someone else from -- what is
22 that about? Why would that be in inventory?

23 A. One is the lessor and one is the lessee, and UGI owned --
24 my understanding, UGI owned both.

25 THE COURT: Why would it be from to in an inventory?

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1 A. It's referring to the lease. Coming into the possession
2 of the lease by virtue of lease dated from -- so that wording
3 right there is just referring to the lease.

4 MR. FELMLY: I believe what's reflected there, Your
5 Honor, in the from and to is the pre-existing company,
6 Charleston Consolidated Railway, is leasing these properties
7 to the newly formed subsidiary that UGI created in 1910 to be
8 the vehicle or the entity to run the plant. So that is --

9 THE COURT: It's the inventory for the purpose of the
10 lease.

11 MR. FELMLY: For the purpose of the lease, and of
12 course our position is that the lease was not a real lease,
13 but Mr. Blake, who will testify later in this case, our
14 accountant and financial expert, can talk more about that.
15 But that's the reason why it's set up that way.

16 BY MR. FELMLY:

17 Q. My purpose in part, Mr. Shifrin, or Dr. Shrifrin, is also
18 to just note that there clearly was, and we're seeing now on
19 the third page of this, which is 7058 in terms of the Bates
20 stamp, there is a steel tar tank. There clearly were, at the
21 time that they took over the plant, tar-handling equipment,
22 tar-storing equipment as part of the materials received at
23 this time. Is that right?

24 A. Yes.

25 THE COURT: Does the inventory show that tar that you

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1 testified earlier was on site?

2 A. I don't think so.

3 MR. FELMLY: Yeah, just on that point that the Court
4 raised, it's a good point. Looking at the bottom of the last
5 page of this inventory under manufacturing materials on site,
6 Denise, if you could zip that up, please, or zoom it up.

7 BY MR. FELMLY:

8 Q. It does indicate certain products that were on site, but
9 it doesn't reference the tar. Is that right?

10 A. Right.

11 MR. FELMLY: If we could go back to the laptop,
12 please. And, Denise, if you could bring up the next slide.
13 What I'm interested in from a timing point of view is the
14 portion right down at the bottom of the page. This is a --
15 this is 091121, and if you could bring this up.

16 BY MR. FELMLY:

17 Q. This is a portion of the American Gas Light Journal from
18 November 7th, 1910, and this indicates -- well, we can all
19 read it. The construction division of the United Gas
20 Improvement Company, the new water gas sets will be ready for
21 gas making not later than January 15th.

22 Now, there's a new word here that I want to direct your
23 attention to. Water gas, is that a shorthand for carbureted
24 water gas?

25 A. Yes.

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1 Q. And when they talk about the gas sets being ready for gas,
2 what is, based on your engineering understanding, what is
3 being communicated here in terms of the progress of the plant
4 being, in fact, presented or built?

5 A. As I described yesterday, the gas set is the combination
6 of the generator carburetor, super heater, and often usually
7 the wash box and the first scrubber. But that's basically the
8 gas making equipment.

9 Q. So in this trade journal that goes back to 1910, it's
10 identifying that the construction division of the United Gas
11 Improvement Company is the party that is producing or
12 producing this construction of the water gas sets?

13 A. That's right. And at this point in time construction was
14 performed internally by UGI. Later, UGI created a subsidiary
15 construction company that it then dictated that construction
16 be done through that company. But at this point in time
17 construction was internal to UGI, the actual mother company.

18 THE COURT: They said something about Mr. Waring
19 there, and you cut it off?

20 MR. FELMLY: I did cut it off, and I don't think -- I
21 can, after lunch, I believe, bring forth what that is.

22 THE COURT: Just read it.

23 MR. FELMLY: No, I don't have the next page. It's an
24 excerpt, Your Honor, but I'll obtain it and come back to it.

25 THE COURT: It's a little after 1:00; let's take a

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1 break for lunch. We'll be in recess until 2:30.

2 (A recess was held at this time.)

3 THE COURT: I know you don't have much to do, so let
4 me give you a few cases to look at. It just so happens, I
5 don't want you to think I'm that much of a student of the law,
6 but just so happens that the issue concerning his testimony
7 about legal matters came up the other day. I was talking with
8 somebody, actually I went to a seminar, went to a workshop,
9 and this law professor interpreted this case to mean that
10 under 705, when you talk -- they kind of confuse 705, the
11 ultimate issue, and a witness testifying as to a legal
12 conclusion. They put them together. And 705 doesn't let them
13 testify to a legal con -- to the ultimate fact, if it involves
14 a legal conclusion. If it's a factual conclusion, they can do
15 it, but not a legal conclusion. That's the way he reads it.
16 I don't know that I would have read it that way. But they're
17 very interesting cases. One of them is United States against
18 Barile, B-A-R-I-L-E, 286 F.3d 749; United States against
19 Leeson, L-E-E-S-O-N, 453 F.3d 631; and the third one is United
20 States against McIver, M-C-I-V-E-R, 470 F.3d 550. And the
21 last one, "The line between a permissible opinion on an
22 ultimate issue and an impermissible legal conclusion is not
23 always easy to discern." And I've always been confused as to
24 705, when can they testify to a legal con -- when can they
25 testify to the ultimate issue and when can't they? And this

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1 seems to clear it up.

2 And one of the cases that is cited, and it deals with a
3 products liability case where it comes up in front of me more
4 than anywhere else, where someone wants to testify that a
5 product is defective and unreasonably dangerous, and these
6 opinions seem to say you can't do that. But anyway, they're
7 right interesting and they do bear on what we were talking
8 about earlier.

9 MR. FELMLY: It bears very particularly, Your Honor,
10 and I should alert you to one other thing, I work real hard,
11 and I don't think Dr. Shrifrin will be wanting to talk about
12 legal conclusions particularly. But we do have as our
13 corporate governance expert, as you know, Professor Macey, who
14 is a lawyer, and we will work hard to study those cases and to
15 try to make sure --

16 THE COURT: Well, you're not from this district and
17 you don't keep up with the Fourth Circuit cases. It's hard
18 enough to keep up with your own circuit, much less -- I never
19 have hardly been able to keep up with Fourth Circuit cases. I
20 look for the summer recess so I can kind of catch up a little
21 bit.

22 MR. FELMLY: If you're going to go other places, I've
23 been trained you better learn to keep up. So I'm happy to do
24 it. But I also wanted to alert you, although I think this is
25 going to become a nonissue. When we scheduled the trial and

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1 we were going back and forth on the date, Professor Macey is
2 actually in China this week, he comes back this weekend, and
3 we were worried about what happened if we finished early on
4 Wednesday or Thursday, and now we're sitting here on
5 Wednesday, I think that's a nonproblem, the way we're going.
6 But I wanted -- we were very pleased and appreciative of the
7 stipulation we had. If for whatever reason we finished our
8 case and Professor Macey wasn't here, Mr. Varon and I have
9 agreed that he would defer any motions that he would have, and
10 we'd call Macey out of order. And assuming you were agreeable
11 to that, in their case, and then they would make -- in the
12 unlikely event they have any motions at the end of my case,
13 they would make it then. And as I say, I don't think we're
14 going to run into that, because I think we'll probably call
15 him right in turn. But we appreciate that.

16 MR. FELMLY: I guess the other thing I wanted to do,
17 Your Honor, we have all of these documents on a database, and
18 while I don't have instantaneous hard copy of things, I wanted
19 to show you, and Denise has brought up on the screen, what Mr.
20 Waring had to say at the end of the --

21 THE COURT: Just curiosity.

22 MR. FELMLY: So it's looking, it's there, right
23 there, and if you look at the screen, Mr. Waring went on to
24 say Mr. Waring is surely and safely hustling things along in
25 his section of the Carolinas. Had to have intended Carolinas,

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1 but it didn't exactly come out that way. But that was the end
2 of the sentence that carried over, Your Honor.

3 THE COURT: That would seem to verify the statement
4 that's been made earlier, that he came in to build a new
5 plant.

6 MR. FELMLY: That's the way we understand it.

7 Denise, if I can move you out of the concordance database
8 and back into this database. Thank you very much.

9 I want to reference -- you're bringing up that property
10 list, good.

11 BY MR. FELMLY:

12 Q. Exhibit 51, Dr. Shrifrin, is entitled a gas sales division
13 ledger.

14 MR. FELMLY: And if you could go to the first page,
15 Denise, that describes -- past the cover sheet, what this is.
16 And I want to orient the parties and the Court to what we're
17 seeing here. And if you could highlight the reference on the
18 left side.

19 So this is the listing from the UGI records of the
20 transactions involving Lowe water gas apparatus sets
21 between -- I guess it's 1883 and January 1, 1941 -- that the
22 company sold or put out there in the world, constructed by
23 United Gas Improvement Company. And there were 1991 of them.

24 And I want to go now, Denise, to the page -- I think
25 it's -- well, I don't have a separate Bates -- I do have.

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1 2840. If you could go to page 2840, and tell us about what
2 happened in Charleston. And excuse me, it's 2841, the next
3 page. And if you go to the -- it's down on the left side
4 about eight from -- there you go. You were there, I'm sorry,
5 you were on it. Okay. So this particular transaction
6 involving Charleston, if you could highlight that, indicates
7 that there were two seven-foot-six-inch sized Lowe capacity
8 sets, that the capacity in cubic feet was 1,600,000, and just
9 to be sure we've got the right date, can you go to the top of
10 the page so we know what year these transactions occurred.
11 It's 1910.

12 THE COURT: Are y'all going around the country and
13 trying cases in all these cities?

14 MR. FELMLY: Yeah, I don't think we've been to Port
15 Jervis. We've been to all the others, and Coney Island, we're
16 looking forward to that the 4th of July, Your Honor, but no,
17 we haven't gotten everywhere. It's what we call a niche
18 practice. Anyway, I think I've been testifying mostly.

19 Q. Is that right, Dr. Shifrin?

20 THE COURT: It's not a peanut practice, I'll tell you
21 that.

22 MR. FELMLY: So having established that point, I'd
23 move the admission of Exhibit 51?

24 MR. VARON: No objection.

25 (Plaintiff's Exhibit 51 received.)

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1 MR. FELMLY: Now, Denise, if we could go back to
2 Exhibit 151 and go to the next of the items of the control we
3 were talking about after Mr. Waring's discussion. I'm looking
4 particularly at 1680, counsel. And if you could highlight the
5 top, and these are minutes of the CCR&L company, they are in
6 1916, and if you'd go to the bottom of the page, and right
7 about in that spot there, if you could highlight that, Denise,
8 so we could see.

9 BY MR. FELMLY:

10 Q. With respect to the equipment that is described there
11 that's being approved and authorized for expenditure, which of
12 those, Dr. Shrifrin, would bear on matters that would relate
13 to tar or deal with tar?

14 A. The installation of the tar still, item number 99 here.

15 Q. And again, a tar still does what in terms of the company
16 managing the tar product?

17 A. The tar still could do one of two things. It could be
18 present to demulsify tar emulsions, or it could be present
19 actually to distill tar into saleable subproducts.

20 Q. All right. If you could go to the next one.

21 MR. VARON: Could I just see the full document for a
22 second? I missed this. This -- oh, these are Charleston
23 minutes, okay. What's the Bates stamp?

24 MR. FELMLY: 1680 are the last four digits.

25 MR. VARON: Thank you.

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1 MR. FELMLY: So 405, SCANA 0405 if you could bring
2 that document up, Denise. What's the date and time of the
3 document or the date of the month of the document? These are
4 CCR&L minutes from October of 1921, and I'm interested in the
5 authorizations for equipment that was being obtained at the
6 top of the first -- the first paragraph there, right there.
7 If you could bring that up.

8 Q. Dr. Shrifrin, are any of the items there that the company
9 in Charleston at the MGP is putting in, do any of those relate
10 to management or dealing with tar?

11 A. Requisition number 204, the centrifuge.

12 Q. Now, it says Super Ventrifuge, which sounds like a
13 mouthful. What does that piece of equipment do?

14 A. Usually -- I believe this is probably a trade name for
15 somebody's centrifuge, and centrifuges were used to demulsify
16 tar emulsions.

17 Q. And again, from what you've said with emulsions, emulsions
18 would have a combination of water and tar that would be --
19 make it unsuitable for sale or use in boilers?

20 A. Correct.

21 Q. And so they'd want to get the water out of it, and this
22 centrifuging process would help do that?

23 A. That's right. It was common for carbureted water gas
24 plants to have their own equipment within the plant to
25 condition the tar prior to sale.

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1 Q. If you could bring up --

2 THE COURT: What is this? Are these cities here,
3 Moultrie, Mary, Gibbs --

4 A. These are probably -- these are probably streets where
5 they're installing mains.

6 THE COURT: Those are streets in Charleston.

7 A. Right.

8 THE COURT: Okay.

9 MR. FELMLY: Denise, if you could bring up the next
10 one and go to the top so we can see what it is, and then we're
11 going to go to about a third of a way down the page.

12 BY MR. FELMLY:

13 Q. So these are journal entries, and if you could open it up
14 a little bit further, let's find out which account this is
15 dealing with. So these are journal entries that are dealing
16 with matters involving the United Gas and Improvement Company
17 on the CCR&L journal, is that right?

18 A. Right.

19 Q. And with respect to those journal entries, are there any
20 matters there that deal with UGI having interaction, the UGI
21 company in Philadelphia having an interaction with the
22 subsidiary in Charleston?

23 A. These were accounts where the Charleston company is paying
24 UGI for expenses for personnel to come or go from Charleston.

25 Q. And in connection with the first one of those there's a

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1 person named Hopper in Charleston, operating set with coke and
2 expenses.

3 What's your interpretation of what -- from your knowledge
4 of these plants, what would be those terms referring to
5 activities of?

6 A. From my review of this and all of the materials,
7 periodically, or every now and then UGI sent somebody from its
8 headquarters or from another plant to either inspect or
9 problem solve some aspect of the Charleston plant. And Hopper
10 was one of these people.

11 MR. FELMLY: If we could bring up the next document,
12 Denise. And again, pick up the top so we can see what it is,
13 and then we're going to have to go to the middle of the page.

14 Q. So this is another journal entry involving United Gas
15 Improvement, this is October of 1914, and if you could go to
16 the middle of the page. The entries, these -- again, Dr.
17 Shrifrin, with respect to these references to UGI expenses,
18 can you tell us what you understand these folks to be doing in
19 connection with the Charleston plant?

20 MR. VARON: Objection, Your Honor. I don't think
21 it's a proper foundation that he can tell from the entry
22 what --

23 THE COURT: Say what?

24 MR. VARON: I don't think it's a proper foundation
25 that he can tell from the accounting entry what they were

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1 doing at the plant. But that's my objection.

2 THE COURT: I was assuming this was in evidence.

3 MR. FELMLY: It is in evidence.

4 THE COURT: Okay. I'm just asking him to -- this is
5 a full exhibit. I'm asking him to interpret from the language
6 here if he can tell us, based on his experience, what he
7 thinks these UGI employees were doing in Charleston.

8 A. UGI had sent Warnick, transferred him from Savannah to
9 Charleston to work on the generator fuel issues that the
10 Charleston plant must have been having at the time. And the
11 Charleston plant was reimbursing UGI for the expense.

12 Q. And in the entry just above that, where O.S. Carter spent
13 four days from the construction department, that was regarding
14 some efficiency issues of the power plant?

15 A. Right.

16 THE COURT: Now, the exhibit shows all of these
17 involved Charleston?

18 MR. FELMLY: Yes, this is -- if you go to the top,
19 Denise, so we can answer the Court's question. This is in the
20 journal, the accounting journal of CCR&L, which is UGI's
21 subsidiary operating in Charleston. So this is the parent
22 company bringing its people to Charleston.

23 If you could go to the next document, Denise, in this
24 series, and go to the top, please.

25 BY MR. FELMLY:

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1 Q. So again, these are CCR&L minutes, now we're in May 1917,
2 and if you could go down, this is in the -- do the top group
3 of numbers at the top third of the page there. This one says
4 install an oil skimmer at the outlet of tar separator. So the
5 Charleston MGP is installing what type of a device, Dr.
6 Shrifrin, would be involved, and what does it do with a tar
7 separator?

8 A. As I mentioned yesterday, that the tar separator was the
9 catch all of all the waste water to separate tar from the
10 water. But it also contained -- the waste water is also
11 contained -- often contained oils which floated on the top.
12 Whereas the design of a tar separator was to collect the tar
13 from the bottom, here they're installing a skimmer to collect
14 the oil from the top. So they're collecting both hydrocarbon
15 phases to purify the water.

16 Q. If you could go to --

17 THE COURT: And those are street names that they are
18 installing on Logan Street and South Battery?

19 A. That's right.

20 THE COURT: This is work that's being done by the
21 defendant and reimbursed by its subsidiary?

22 A. No, this is within the local budget of the CCR&L. In
23 other words, these are CCR&L directors' minutes.

24 THE COURT: Those expenditures are work that they
25 did.

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1 A. That the local plant did.

2 THE COURT: What's the connection between that work
3 and the defendant?

4 A. In my opinion, the connection is that there are UGI
5 corresponding minutes that authorize the budgets that we see
6 being spent within these --

7 THE COURT: But the work was actually done and paid
8 for in Charleston.

9 A. That's right.

10 THE COURT: Okay.

11 MR. FELMLY: If we could go to the next document,
12 Denise. Now, go to the top, please, so we can identify what
13 this is. These are minutes of February 11th, 1919, of the
14 United Gas Improvement Company, these are directors' minutes.
15 And if you could go to the bottom of the page and highlight
16 that bottom paragraph. You were indicating earlier, Dr.
17 Shrifrin, that you were familiar with the United Contracting
18 Company, the UGI contracting company, and had familiarity with
19 a subsidiary company they formed at a later time from 1910?

20 A. Right.

21 Q. Is this approximately the time in 1919, and does this
22 minute deal with the discussion of the plan to form a separate
23 subsidiary?

24 A. I believe so. Around 1919 is the date.

25 MR. FELMLY: And if you go to the top part of this

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1 thing and if we could highlight the first five or six lines,
2 Denise.

3 Q. In the past, all engineering plans and specifications for
4 extensions and improvements of the various plants have been
5 prepared, and supervision over the construction has been
6 assumed by the engineering department of the United Gas
7 Improvement Company. It has also placed all contracts for
8 apparatus without charge to the local companies. The result
9 has been that a large overhead expense of the engineering
10 department legitimately chargeable against the local companies
11 has been born by the United Gas Improvement Company.

12 What is your understanding from this and from the other
13 things you've seen, as to how construction matters and work on
14 the operating companies that the UGI was interested or
15 involved in, was handled before 1919?

16 A. Up to this point construction projects were handled
17 internal to UGI, Philadelphia. And that would include, by the
18 way, the 1910 reconstruction of the Charleston plant.

19 What they're talking about here is from this point on,
20 they're going to separate the bookkeeping, basically.

21 MR. FELMLY: Now, if you go to the bottom of the
22 page, Denise, and if you could highlight from about there
23 where it says also the general organization of the United Gas
24 Improvement Company. If you could highlight for the bottom of
25 the page.

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1 Q. Also, the general organization of the United Gas
2 Improvement Company has worked up a market for and handled the
3 sales of residuals for the Philadelphia Gas Works, and,
4 parens, though not to such a large extent, close parens, the
5 other gas works in which this company is interested as a
6 stockholder.

7 Now, first of all, with respect to this issue of the
8 market for residuals, do you understand, based on your
9 knowledge of this company and the use of that term in this
10 period, what that means?

11 A. It meant basically a market for tar as well as a market
12 for fertilizer.

13 THE COURT: What's the date of those minutes?

14 MR. FELMLY: 1919, sir, February 11th, 1919.

15 Do you not have the second page of those minutes, Denise?
16 All right. Bates number is 08766.

17 THE COURT: Let me ask you a question. If that
18 statement is true, then at the time this plant was built in
19 1910, the policy of UGI would have been for it to spend the
20 money itself for the engineering and all?

21 MR. FELMLY: And build it.

22 THE COURT: Okay. Do you see that expense on their
23 books?

24 MR. FELMLY: We see some of the expense on the books,
25 because we saw, for example, that exhibit that I put in

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1 earlier, the new sets that they sold in Charleston in 1910,
2 those expenses were there. We don't see all of the expenses
3 for all of the construction in 1910, or I haven't seen all of
4 it. But we do see some of it. The water gas sets that were
5 in the exhibit where they showed how many sets they had sold,
6 did show the expenses for Charleston.

7 But I don't think it's true that --

8 THE COURT: But that was an expense that was paid for
9 by Charleston. According to this witness' testimony.

10 MR. FELMLY: No, that's not clear. I don't want to
11 testify for him. When you --

12 THE COURT: I thought he said it was in his budget,
13 the local company's budget.

14 MR. FELMLY: But there were three different exhibits
15 we dealt with. Some of these minutes show CCR&L spending
16 money, and that's one you were asking about the oil skimmer.
17 Some of them, when the gentleman came from Savannah and came
18 in, those were payments being made by CCR&L, the subsidiary,
19 back to the parent.

20 THE COURT: I understood that testimony.

21 MR. FELMLY: And I think the issue is with respect to
22 the purchase of the water gas sets, it's not entirely clear,
23 but it may well have been the local company paying UGI for the
24 transaction may have involved paying UGI for the water sets.
25 And then there's some expenses that just we do not have and

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1 maybe the defense on cross will show us them. I don't know.

2 THE COURT: Okay.

3 MR. FELMLY: But we're now on the second page,

4 Denise, and can you go to the top third of the page.

5 BY MR. FELMLY:

6 Q. That a new corporation be formed, to be known as the UGI
7 Contracting Company, this company is to take over all the
8 construction business formerly handled by the United Gas
9 Improvement Company, except the contract with Connecticut
10 Light and Power.

11 So just to move off of this, or summarize it and move off
12 of it, in 1919 they created a new company, Dr. Shrifrin?

13 A. Right.

14 Q. A subsidiary company of theirs?

15 A. Right.

16 Q. Before that, a portion of their business was doing this
17 work.

18 A. Was constructing gas plants and gas plant equipment.

19 MR. FELMLY: And could we go to the next exhibit,
20 Denise, the UGI Circle. And if you highlight the left side of
21 this, this is -- the Court probably has figured out from some
22 of these exhibits, the UGI Circle is sort of the in-house
23 newspaper or bulletin of the company.

24 This describes further the Contracting Company, and I'm
25 just trying to get the date on this. This is Circle -- the

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1 Bates number is 5250, and it is November of 1922, is what I
2 have.

3 Highlight the middle paragraph, please.

4 Q. This organization has hitherto been utilized only by the
5 companies in which the United Gas Improvement Company is
6 financially interested, and is, therefore, not being utilized
7 in as wide a field as might be obtained. It is proposed to
8 solicit power plant contracts among the power generating
9 companies generally throughout the United States.

10 So again, this is consistent with that time period in the
11 late teens and early 20s where they wanted to move this new
12 construction subsidiary into broader areas?

13 A. Yes. And the other thing to read in this is that prior to
14 this, prior to 1922, all of UGI's construction capability was
15 captive within its organization.

16 MR. FELMLY: And if you could go to the next one,
17 this is a -- actually I was hoping you would go to 5023.

18 All right. This is a further discussion, if you go to the
19 top of the page and highlight on the right side this time,
20 please.

21 Q. The personnel of the contracting company are the same as
22 that of the construction department, with the exception that
23 we have added an accounting division, and it goes on to
24 describe that.

25 So, Dr. Shrifrin, does it appear that the origin of this

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1 new subsidiary that was doing their construction, grew out of
2 the original company and had the same people?

3 A. Yes.

4 MR. FELMLY: And then if you could go to the bottom
5 of this paragraph, Denise, where it says the position of the
6 UGI contractor. Right down there.

7 Q. Being the construction department of the United Gas
8 Improvement Company, its officers and employees are in daily
9 contact with the members of the operating department of our
10 parent company, as these men are individually and collectively
11 experts in the design and operation of electric power plants
12 and gas plants, the contracting company is able to give the
13 experience of the operating department to the clients of the
14 contracting company. We know of no other general contracting
15 company which has this advantageous position.

16 MR. FELMLY: If you now go to 6326, the scope of the
17 work of the UGI Contracting Company.

18 Q. This article by Hunter is June of 1925, and again this
19 article would identify further information about the history
20 of this subsidiary, and if we go down to the bottom of the
21 page on the left side here, that bottom paragraph, this
22 indicates that the Contracting Company, this subsidiary, in
23 its incorporation, inherited the business of the construction
24 department of the United Gas Improvement Company.

25 Is that consistent with your understanding of the growth

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1 of this company?

2 A. Yes. The subsidiary essentially just continued what was
3 internal to UGI.

4 MR. FELMLY: And then if we could go to 4212, the
5 next one, please. And at the bottom right paragraph at the
6 bottom right column.

7 Q. The UGI Contracting Company now undertakes all
8 construction work for the United Gas Improvement Company and
9 does a general gas and electric engineering and contracting
10 business with other companies. It carries with it all the
11 experience and prestige of its parent company, and is fast
12 building up an enviable reputation of its own due to the
13 untiring efforts of those having its affairs in charge.

14 So --

15 MR. VARON: Is there a question, Your Honor?

16 THE COURT: Yes, sir.

17 MR. VARON: Is there a question?

18 MR. FELMLY: Yeah. Well, what I want --

19 MR. VARON: I hope I get the same liberties, that's
20 all.

21 THE COURT: I can't understand you.

22 MR. VARON: I was just commenting there's no
23 question. Mr. Felmlly is reading the articles into the record,
24 and that's fine, if that's how we would like to do it, I just
25 hope that I'm able to do that as well.

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1 MR. FELMLY: Here's the question.

2 THE COURT: Well, every lawyer has an opportunity to
3 publish a document that's in evidence. And if he doesn't
4 publish the parts that you like, Rule 104 -- I get 104 and 106
5 mixed up, one or the other -- contains a so-called rule of
6 completeness, which you can require him to read any other
7 parts that I need to hear in order to properly understand the
8 document.

9 MR. VARON: That's fine.

10 THE COURT: Or when you do your examination, you can
11 publish those again. I don't usually permit publication
12 twice.

13 MR. VARON: Okay. Thank you.

14 MR. FELMLY: I'm done with --

15 BY MR. FELMLY:

16 Q. The UGI Contracting Company is an important subsidiary of
17 UGI, is it not, Dr. Shrifrin?

18 A. Yes.

19 Q. And why is that? Why did we just spend a lot of time on
20 its history and its origin? Why, in connection with your
21 opinions regarding the control that UGI had of the Charleston
22 MGP, is this analysis and this history of what was the
23 contracting/construction arm of the company, why is that
24 important?

25 A. I think that it's important because these documents show

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1 that when I say that UGI built a plant or built the Charleston
2 plant, they literally built the plant. And in 1910, it was
3 the actual company that built the plant, and by 1919, they
4 established a subsidiary. And admittedly, it wasn't the
5 original company, the parent company, but it was, as this
6 article or the article before shows, it was essentially the
7 identical business to the business of building plants when it
8 was internal to the company.

9 MR. FELMLY: If we could take a look, please, Denise,
10 at 1183, the next exhibit, please. And the second item down
11 on the right side.

12 Q. This is again the UGI Circle, and I mentioned it before,
13 but what was the UGI Circle and how has that been an important
14 base of information for you to review to find out data about
15 the history of UGI?

16 A. The UGI Circle was an internal newsletter distributed
17 throughout the UGI organization to the plants and within the
18 Philadelphia departments. And it had technical articles in it
19 about gas plants, plant operations. It also had a lot of
20 articles about individuals. So-and-so was transferred to one
21 plant or another, or showed up at one plant for an inspection.
22 It also had sort of down home type articles for employee
23 morale, like we had a picnic this month and things like that.

24 Q. Now, the one I'm showing you here, which I believe is in
25 August of 2000 -- no, this one is in -- you don't -- I don't

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1 actually have the date handy on this one. We can track that
2 down. But what is being reported about Mr. Paff, and what is
3 he doing in Charleston with something called a purifier box on
4 behalf of UGI?

5 A. Up to this point there were three purifier boxes at the
6 plant, and this is indicating when they built the fourth
7 purifier box, which I think was 1922, but I'm not sure.

8 Q. So with regard to Mr. Paff, is he a local Charleston
9 person that is doing that work, or is he coming from someplace
10 else?

11 A. I believe he's a UGI person.

12 Q. If we could go to the next item, please. Now, this is the
13 UGI Circle, and it's talking about a new steam line to the
14 Charleston works, this is Bates 1218. This is an excerpt from
15 July 1923.

16 Are you familiar in general terms with the construction of
17 this steam line that ran to the Charleston gas plant?

18 A. Yes. I believe in 1913 when the plant started up, there
19 was a steam line that went to the gas plant. This was
20 reporting the installation of a new steam line.

21 MR. FELMLY: If we could go to the bottom of the page
22 where it's at the bottom right at the bottom at the carryover
23 portion, Denise, if you could highlight the bottom section
24 just where it goes over to the next page.

25 Q. In pouring the concrete footings it was necessary to have

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1 a pump going to remove the tar from the forms. This tar -- do
2 you have the next page, too -- into the hole with the water,
3 parens, the Charleston works is only a few feet above sea
4 level and would have been -- would have affected the quality
5 of the concrete.

6 Can you tell us, sir, based on your understanding of the
7 engineering of this, what are they experiencing and having
8 happen when they're working on this new steam line?

9 A. They were -- to install this steam line they dug a trench,
10 and I believe they installed footings, like I mentioned
11 earlier, for the steam plant. And as they were excavating in
12 the ground, tar was pouring into the holes and they had to
13 manage that tar.

14 Q. And is this in the area, the steam plant is the area
15 that's called Luden's in a more modern era?

16 A. Right.

17 Q. Down where that marina area was?

18 A. Right.

19 Q. So what does this tell you in connection with the
20 knowledge that UGI would have with respect to tar being
21 present in the ground some distance actually from the
22 manufactured gas plant?

23 A. This makes it very clear that UGI was aware that tar was
24 in the subsurface.

25 Q. Is there any indication that you've seen of -- other than

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1 their efforts to get a pump going to remove this, of any
2 further investigation made back at that time by UGI as to what
3 to do about the tar that was down in the ground?

4 A. I haven't seen anything.

5 MR. FELMLY: If you could bring up the next item.

6 And it's the first bulleted point.

7 Q. Actually, good point. These are minutes of the United Gas
8 Improvement Company in August of 1910. So this is the year
9 they took over.

10 Dr. Shrifrin, there is an indication in the first item
11 that the limit for making ordinary repairs at the works was
12 \$50 for any one job without obtaining formal authorization.
13 What's your understanding of how this was applied or what the
14 significance of this particular rule was?

15 A. I think this is extremely significant, because -- and this
16 is not a business point, this is an operation point. Because
17 this is the board talking about maintenance at the local
18 plant. And this is the UGI board saying nothing above \$50 in
19 Charleston can be done without first being authorized in
20 Philadelphia.

21 I think that's extremely significant. Because we see this
22 back and forth between CCR&L minutes and UGI minutes that
23 there are construction, like for example, the new construction
24 for the oil skimmer, or repairs on piping or various parts of
25 the plant, that we see that there are umbrella budget

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1 authorizations on the UGI side, and then individual spending
2 items on the CCR&L side. And what this says, this actually
3 completes the picture, because it says no matter whether
4 you're spending within your limit, everything above \$50 has
5 got to be approved in Philadelphia.

6 MR. FELMLY: If you could bring up 0211, Denise. And
7 at the bottom third of the page is what -- Well, first of all,
8 these are United Gas Improvement minutes, this is several
9 years later now from the one we just saw, this is
10 February 10th, 1913.

11 Now if you could go down to the bottom portion of the
12 page. We may have to zoom up on that to see what we've got
13 here.

14 This is called limit of expenditures for repairs without
15 formal authorization. Recommended increase in the maximum
16 limit of amount of expenditure allowed for making repairs
17 without first securing formal authorization as per the
18 following schedule.

19 Q. You're familiar with this document, sir; what is this now
20 saying and particularly in relation to the one we saw back in
21 1910 where they had a limit of 50 bucks?

22 A. This is a modification to the 1910 limit where they're
23 raising it to \$75. In my opinion, this is very tight control
24 of operations. Because this is a maintenance issue. This is
25 giving them budget authority only below \$75 on maintenance

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1 issues. Everything else is to be preapproved in Philadelphia.

2 Q. Now, with respect to the format of this vote by the UGI
3 executive committee board, obviously Charleston is the third
4 item down. What are all these other listings here?

5 A. These are all other plants that are within UGI's domain.
6 So it shows that Charleston is actually not the exception, it
7 shows that this is -- this is the method of operation, this is
8 the way UGI maintained its control over maintenance at all of
9 its plants. It had different budgets, possibly because the
10 plants were different sizes and had different financial
11 conditions. But -- same concept.

12 Q. Now, in 1910 or 1913, obviously \$50 or \$75 went further
13 than now. But how big a deal is it or what's the significance
14 of that low a limitation with respect to repairing a
15 manufacturing plant with the complexity and issues that a
16 manufactured gas plant would have?

17 A. My opinion, this represents pretty tight control. As you
18 say, \$75 went a longer way in 1913 than it does today, but
19 nevertheless, what this says is that we're giving a little bit
20 of local control to the Charleston plant, but in general, we
21 in Philadelphia are managing the maintenance of this plant.
22 In terms of spending authority.

23 MR. FELMLY: If you could go to the next slide,
24 Denise, I think we'll be finished with this group. If you
25 could highlight the portion that's South Carolina in the

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1 middle side of the page. That's Bates 90979, counsel.

2 Q. This is February 1922, at the top right-hand corner that
3 we're not seeing, but I can see it. A new 21-foot purifier
4 complete with connections is to be added to the purification
5 system at the CCR&L. The equipment is to be furnished by the
6 UGI Contracting Company.

7 First of all, a purifier, 21-foot purifier complete with
8 connections, and I know you went through some of this
9 yesterday for us, what does that machine do, or what does that
10 process do?

11 A. The purifier is designed to take hydrogen sulfide out of
12 the gas. It carbureted water -- in a coal gas plant it's also
13 designed to take cyanide out of the gas. But there's not a
14 lot of cyanide made in water gas, but it would perform that
15 function also.

16 Q. And is this a device that would come in contact with tar
17 or have tar aspects in connection with it?

18 A. Purifiers typically did get fouled with tar, which drained
19 to the bottom, but also followed the wood chips that were in
20 the purifier.

21 MR. FELMLY: Your Honor, I'd now like to turn to
22 Exhibit 159. It is another composite exhibit, fortunately
23 much smaller, and dealing with inspections of the plant. And
24 with regard to that, I would also move the admission as a full
25 exhibit of Exhibit 159, removing only the summary sheet, as I

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1 did on these other composite exhibits. All the rest of the
2 documents are the historic underdocuments, so I would take out
3 the summary sheet and offer it as a full exhibit.

4 THE COURT: Any objection?

5 MR. VARON: No, Your Honor, not the historical
6 documents.

7 (Plaintiff's Exhibit 159 received.)

8 BY MR. FELMLY:

9 Q. First of all, Dr. Shrifrin, in terms of the issue of
10 inspection, and in a somewhat broader way before we get into
11 the detailed inspections that took place, in the -- in cycles
12 of manufacturing that you described, what are the important
13 and/or critically sensitive portions of the plant that tend to
14 be most subject to the need for careful oversight, watching or
15 inspection? Where are the places in this plant that from an
16 inspection point of view you would expect, based on your
17 understanding of its engineering, that you'd need to focus
18 your attention?

19 A. Well, the most complex area of the plant was the gas
20 generation area. And that probably required inspection or
21 tweaking or problem solving more often than other areas of the
22 plant.

23 Q. Is there a safety issue with respect to the operation of a
24 manufactured gas plant back in the 1910 to '26 era?

25 A. It was a huge safety issue. These plants could blow up at

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1 any time, and there are histories of other plants blowing up.
2 Gas, of course, is highly flammable. And plant operators were
3 constantly attentive and in fear of the gas catching fire.

4 Q. Have you been involved in connection with looking at
5 manufactured gas plants, where there actually was a historic
6 explosion that destroyed the plant?

7 A. I don't remember an explosion that destroyed the entire
8 plant, but I've been involved with MGPs where there were
9 explosions, yes.

10 Q. Do you recall the one in Laconia, New Hampshire, that
11 involved a gas house having an explosion?

12 A. Yes.

13 Q. In any case, is one of the things that had to be done,
14 very careful attention to making sure that gas did not leak
15 and cause an explosion risk?

16 A. That's right. And it was a real issue, for example, in
17 inspecting gas holders, and that's why gas holders didn't get
18 inspected internally very often, because it was a very huge
19 effort to purge all the gas out of the holder, in order to get
20 inside that thing to inspect it.

21 MR. FELMLY: Denise, if you could bring up 0106 on
22 the subject of inspections, and first go to the top so we can
23 identify what this is. This is minutes of the executive
24 committee of the United Gas Improvement Company in May of
25 1911. And if you could come down and highlight the top

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1 portion of the page.

2 Q. Charleston is referenced down below as well. There's a
3 reference to inspection of the distribution process of
4 Charleston here. The distribution department would be what in
5 relation to the so-called works, Dr. Shrifrin?

6 A. The best way to think of it would be probably starting
7 with the city holder outward into the city. In other words,
8 distribution of the gas to the consumers.

9 Q. And in the paragraph above where it says full works
10 inspections have been made, what is that contemplating or
11 saying?

12 A. Those would be inspections of all the gas manufacturing
13 elements.

14 Q. And when this is entitled in these minutes, works
15 inspection report of the superintendent of the works, who is
16 doing the inspecting of the Charleston distribution company or
17 these other companies that are listed here? Who are the
18 inspectors?

19 A. Generally they're engineers. These are operational
20 inspections, they're not accounting inspections. So they
21 would be engineers who had knowledge of how the plant operated
22 and how these plants -- how a plant should be operated and how
23 these plants were operated.

24 Q. Now, these are UGI minutes. Whose employees are these
25 inspectors and where do they come from?

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1 A. These inspectors would report to the general
2 superintendent at UGI. UGI's structure, in addition to
3 officers of the company, had what's known as a general
4 superintendent, and there are documents such as Circles and
5 UGI histories that note that the general superintendent was in
6 charge of all of the superintendents at all of the plants and
7 the subsidiaries. And the general superintendent's office had
8 engineers that they would send out to inspect these plants.

9 Q. And where was that office, the general superintendent's
10 office?

11 A. In Philadelphia.

12 MR. FELMLY: If you could go down one more paragraph,
13 we'll get to the works inspection for Charleston. Highlight
14 that one.

15 Q. It says in addition to the above regular inspections,
16 visits have been made from the men from the superintendent of
17 works department as follows. And it indicates Charleston. Do
18 you understand what it means, two?

19 A. There were two inspections.

20 Q. So these would be people from Philadelphia coming to
21 Charleston to inspect the plant.

22 A. That's right.

23 MR. FELMLY: If we could have the next exhibit up,
24 please.

25 Q. Now, first let's do the top to make sure we understand,

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1 this is a ledger of the subsidiary, Charleston Consolidated
2 Railway and Lighting.

3 A. Right.

4 MR. FELMLY: And if you could open it up a little
5 bit, Denise, so we could see what the -- I want to go to the
6 bottom of the page, actually the bottom third of the page.

7 Q. This is an account -- tell me what you understand this
8 document to be, sir.

9 A. This is an accounting ledger of payments made from the
10 Charleston plant to UGI. And in this case, it's paying the
11 travel expenses for a UGI superintendent's person to go from
12 Savannah to Charleston.

13 Q. That's the first one. And what's the second one?

14 A. Again, this is a payment from the Charleston plant to UGI
15 for a UGI employee coming to the Charleston plant and paying
16 his travel expenses.

17 Q. And when it talks about investigating field for industrial
18 gas and examining installations of rector heating systems, do
19 you know what that is?

20 A. I don't know what a rector heating system is, but this
21 is -- this is a business development person, it looks like,
22 that's coming to the Charleston plant to try to open up
23 markets.

24 Q. So this may be actually in the distribution side of the
25 business?

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1 A. Or the sales part of the business.

2 MR. FELMLY: Okay. Let's bring up the next
3 inspection. At the top entry, these are journal entries of
4 CCR&L for March 1914. And if you could go down, Denise, about
5 three-quarters of the way down the page.

6 Q. March 31, the entry involving Mr. Cooke from the general
7 superintendent's department. What do you understand was
8 occurring there in terms of the issue of inspections?

9 A. This was a payment to -- from Charleston to UGI, probably
10 for one of those two inspections that were noted in the UGI
11 minutes.

12 Q. And this was an inspection of the works?

13 A. Yes.

14 Q. And works means the gas plant?

15 A. Right.

16 Q. If we could go to the next page, please, and first
17 identify what we're talking about at the top. This is
18 September 1914, CCR&L, and if you could go to the -- this is
19 an account of UGI, is it, payments made to UGI from the
20 subsidiary?

21 A. Right.

22 Q. And what are the three entries, the first three entries?
23 August 19th, somebody named C.L. Bruff, combustion engineer
24 and assistants; they're there from October 1st, 1912, until
25 June 30, 1914. Can I be reading that right? Are they there

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1 that length of time?

2 A. Yeah, they were probably troubleshooting and starting up
3 and making equipment more efficient. They could have been
4 there for a year and a half.

5 Q. And how about the next portion of it?

6 A. It looks like it's more of the same kind of work,
7 combustion equipment.

8 Q. And then in the next entry, is that also related to that?

9 A. This looks like it was likely to be gas plant apparatus.
10 It's not specific, but it says testing. So it probably had
11 something to do with troubleshooting and efficiency.

12 MR. FELMLY: If we could bring up the next
13 inspection, please.

14 Q. Again, this is October 1914, this is the subsidiary making
15 payments to UGI in the UGI account, is that correct?

16 A. Right.

17 MR. FELMLY: And if you could go to the middle of the
18 page, Denise, just above that.

19 Q. I'm looking at the October entry, October 8, for
20 proportion of time of C.L. Bruff combustion engineer
21 inspecting and testing your plant apparatus. Is that similar
22 entry to what we just saw?

23 A. Yes, this is another payment for that same individual.

24 MR. FELMLY: And then if you could go to the next
25 one. This is November of 1914, CCR&L. And if you go to just

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1 below halfway down, Denise.

2 Q. And November 20th, for proportion of time of C.L. Bruff,
3 combustion engineer, inspecting and testing your plant
4 apparatus during the month of October. A number of entries of
5 this sort. Are we able to tell from that entry what portion
6 of the plant it was being dealt with or even if it dealt with
7 the steam plant?

8 A. It's possible that it dealt with the steam plant, it's
9 possible that it dealt with the blow part of the generator,
10 the gas generator.

11 Q. But these would be individuals from Philadelphia coming to
12 Charleston on UGI's behalf?

13 A. That's right.

14 MR. FELMLY: The next entry, please, SCANA 33009. At
15 the bottom of the page. First we'll do that. It's December
16 of 1914, CCR&L. And if you'd go to the bottom right in the
17 middle of the big -- there you go.

18 Q. December 10, for proportion of time for C.L. Bruff,
19 combustion engineer, inspecting and testing your plant.

20 Again, same gentleman working on the plant at that month.

21 A. The following month, yeah.

22 MR. FELMLY: If you could now go to 02477. And the
23 third entry -- well, that's correct. February 1915, CCR&L
24 journal entries, if you'd go to the third entry from the
25 bottom, Denise.

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1 Q. March 8, proportion of February expenses of H.R. Cooke,
2 second vice president's department, account of southern trip
3 and in Charleston on visit to inspect gas works and discuss
4 manufacturing results.

5 That's clearly the gas plant, not the steam plant.

6 A. That's right.

7 Q. And again, this individual now referred to as the second
8 vice president's department, what do you understand this
9 person to be as an inspector?

10 A. I believe that the second vice president was the operating
11 department, but I'm not sure.

12 MR. FELMLY: Now, that was in February of 1915. If
13 we go to the next one, please, Denise, and go to the top of
14 the page so we can identify the date. This is March of 1918.
15 CCR&L.

16 Q. And if you could go to the bottom of the page in the
17 middle in that group of listings there, February 28th, we see
18 Mr. Cooke referenced again between February 10 to February 20,
19 he's been to several places, account of a trip from
20 Philadelphia from Washington, Atlanta, Charleston and return,
21 and in Charleston on visit to inspect operation of coal gas
22 plant.

23 Now, is that -- well, tell me what the significance of
24 that is, Dr. Shrifrin.

25 A. This is the year that I mentioned earlier that the

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1 Charleston plant reopened the coal gas manufacturing to supply
2 extra gas due to shortage of production. And they must have
3 sent this UGI person to help with that coal retort fire up.

4 Q. But this would be the gas plant, not the steam plant?

5 A. This is definitely the gas plant.

6 Q. This is while they're working on it to run coal for coal
7 gas for whatever period of time they did that?

8 A. Right.

9 MR. FELMLY: If we can see the next inspection,
10 please. Now, this is a UGI Circle article. And, Denise, I'll
11 represent to the Court that this one is -- this one is
12 November of 1920. And if you go to the lower left-hand
13 corner, Mr. Irwin --

14 Q. Just going back to the style of this, this is a bulletin
15 that's sent as an intercompany sort of newsletter or
16 informational piece, is that right?

17 A. Right. And it had technical articles as well as these
18 kinds of personnel articles.

19 Q. And it would capture in these descriptions, people coming
20 and going within the UGI organization?

21 A. Right. Among other things.

22 Q. In this situation, what's relevant about the situation
23 involving Mr. Irwin?

24 A. Irwin is from Philadelphia, and here the Circle is
25 reporting that he stopped -- he visited the Charleston plant

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1 and was troubleshooting fuel economy problems, while he was
2 also inspecting the plant. The inspection is probably related
3 to the fuel economy problems.

4 Q. And how long did he spend there, according to this?

5 A. A week.

6 Q. And when they left, they wanted him to bring back somebody
7 else that apparently they liked?

8 A. Right.

9 MR. FELMLY: Okay. If we could have the next one,
10 please. This is the UGI Circle, I believe this one is April
11 of 1922. It's 4804, counsel. Over on the right side, Denise,
12 about a third of the way up from the bottom, there we go.

13 Q. Just another Circle reference indicating that somebody
14 from the Philadelphia office was in Charleston to make an
15 inspection of the plant.

16 A. Right.

17 MR. FELMLY: If we could go to the next article,
18 which is November of 1926, right at the -- really the end of
19 UGI's era there. This is the Circle. If you could do the top
20 paragraph on the left side.

21 Q. Now, this indicates that a safety inspector, Mr. Tucker,
22 from Broad and Arch. Broad and Arch is an address obviously.
23 What's the significance of it when we see it referenced in
24 these documents?

25 A. Broad and Arch is in Philadelphia, and that's UGI

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1 headquarters. That was UGI headquarters.

2 Q. So -- so this is the Charleston -- this is in the UGI
3 bulletin, and it's an article where somebody is describing
4 events in Charleston. At the Charleston site.

5 A. Right.

6 Q. And they're recounting that a safety inspector from the
7 home office or from Broad and Arch paid them a visit,
8 inspected the property and the gas department, and it was
9 decided to put on an exhibition of the proper method of
10 resuscitation for persons overcome by gas.

11 A. Right.

12 Q. So in addition to how efficient the machinery might work
13 or what the proper times are to run the blow or any of these
14 other technical things, they also had information on safety
15 and worker health?

16 MR. VARON: Objection, Your Honor, there's no
17 references to any of those things in the article, in the
18 safety report or anywhere else.

19 MR. FELMLY: I thought resuscitation for persons
20 overcome by gas might be in that category.

21 MR. VARON: No, the blow and the rest of your
22 references in the leading question that you asked.

23 THE COURT: I'm not sure I understand you.

24 MR. VARON: I was objecting to the leading nature of
25 the --

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1 THE COURT: There's no question about it being
2 leading.

3 MR. VARON: Not only leading, Your Honor, it was
4 inaccurate. It was making things up about what an inspection
5 might have consisted of.

6 THE COURT: I've got it right in front of me, and as
7 he read it, I read it, and I know exactly what it said.

8 MR. FELMLY: If we can go to the next one, please.

9 This is the UGI Circle, it's Bates 4825, and this is May
10 of 2000 -- excuse me, of 1922.

11 BY MR. FELMLY:

12 Q. With respect to the item that Denise is highlighting, in
13 this issue of the Circle, what do you understand is occurring
14 during Mr. Messenger's visit from UGI to the Charleston plant?

15 A. During this time, UGI was conducting a massive inspection
16 of the Charleston plant. The UGI employee named Hessler gave
17 a report to the CCR&L board at two points during this year
18 where he noted that he had a, quote, "force of engineers"
19 inspecting the plant for three months.

20 It's important to note that he said a force of engineers,
21 not a force of accountants. So these were engineers
22 inspecting the engineering aspects of the plant, the operating
23 aspects of the plant. Messenger was probably sent down there
24 to check on the work.

25 MR. FELMLY: I want to now turn my attention to

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1 Exhibit 158, which again is a composite. This one is entitled
2 examples of UGI's control of the waste --

3 MR. VARON: Can you slow down for a second, please?

4 Thank you. What's the name on 158, please?

5 MR. FELMLY: The title of the exhibit is examples of
6 UGI's control of waste handling, summary sheet and notebook of
7 source materials.

8 MR. VARON: Okay, thank you.

9 MR. FELMLY: Your Honor, again, this is a composite
10 exhibit. I've taken out the abstract or the summary sheet to
11 it, and all the other materials in here were unobjectionable
12 historic materials, and I asked that it be admitted as a full
13 exhibit.

14 MR. VARON: 158?

15 MR. FELMLY: Yes.

16 MR. VARON: No objection.

17 (Plaintiff's Exhibit 158 received.)

18 MR. FELMLY: If we could bring up, Denise, the first
19 item, which is Bates 3541. If you could go to the top of the
20 page, so we can understand what this document is.

21 Q. This excerpt from the historic documents is entitled the
22 UGI engineering and operating notes, or references the UGI
23 engineering and operating notes, and it is from a 1914 version
24 of those.

25 First of all, Dr. Shrifrin, what are the UGI engineering

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1 and operating notes?

2 A. This was a vehicle of technology transfer between the
3 central company in Philadelphia to all of the subsidiaries.
4 It was published, I believe monthly, and I think the dates of
5 it go from 1911 to 1920. And/or at least those are the issues
6 that I have and have reviewed. It contains a number of
7 different types of information about engineering and operation
8 of gas plants.

9 One prominent element of the engineering notes was that it
10 reported the papers and topics that were presented at the
11 annual superintendent's meetings that UGI held. So this was a
12 handy way for people at the plants to understand the
13 superintendent's meetings, and the operational issues that
14 were discussed at the superintendent's meetings, without
15 having actually attended those meetings.

16 The -- a prominent feature of the engineering and
17 operating notes was in the first edition where instructions
18 were given that these notes are proprietary, they're about the
19 operations of the plant, and they're never to be taken out of
20 the plant property and never to be shown to anybody outside of
21 UGI. So clearly UGI viewed these as proprietary information
22 to transfer its technology and disseminate it throughout its
23 operating subsidiaries.

24 MR. FELMLY: Let me address that. Denise, if you
25 could bring up Exhibit 156. I hadn't told you I was going to

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1 do that, but I appreciate you getting to it. If you could go
2 to the top so we have a clear understanding of what this
3 document is.

4 Q. This is a minute from the UGI executive committee
5 February 20, 1911. And if you could go down into the body of
6 it where the bold portion of it is. The third vice
7 president's department publication of the UGI engineer and
8 operating notes. Is this the publication that you're talking
9 about?

10 A. I'm looking for the section you're reading here. Reading
11 the whole thing, yes, this is the introduction of the
12 engineering operating notes.

13 MR. FELMLY: And at the bottom of the page where it
14 starts the following notes shall appear on the title page of
15 each issue, if you could highlight that, we're going to end up
16 going over to the other page.

17 Q. This publication is intended only for the eyes of those
18 employees who may profit by its perusal. It contains private
19 matter --

20 MR. FELMLY: And then, Denise, if you go over.

21 Q. -- and should not be read by anyone who is not an
22 employee. It should be entered in the binder immediately upon
23 its receipt and not thereafter removed from the binder.

24 Now, you've actually seen some of these notes and seen
25 legends of confidentiality on them, have you?

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1 A. Yes.

2 Q. So who would have access to these confidential engineering
3 and operating notes?

4 A. The operating personnel of the subsidiary plants.

5 Q. Just the people in Philadelphia who got a paycheck that
6 said UGI corporation or other people?

7 A. No, all of the other plants, such as the personnel within
8 the Charleston plant.

9 MR. FELMLY: Your Honor, I'd move that we make
10 Exhibit 156 that we've just displayed, a full exhibit.

11 THE COURT: Any objection?

12 MR. VARON: To 156, no, Your Honor.

13 (Plaintiff's Exhibit 156 received.)

14 BY MR. FELMLY:

15 Q. Now, if we go back to the actual note itself, the
16 substantive note I was addressing.

17 MR. FELMLY: And, Denise, if you could go back to
18 Bates 3541 for a moment.

19 Q. The question that I wanted to address, Dr. Shrifrin, is to
20 what extent the operating notes addressed issues that related
21 to tar by-products, managing those items.

22 A. Throughout the years of these operating notes, there were
23 numerous articles on tar management, how to deal with tar, how
24 to make more money from tar, what kind of applications to use
25 for tar sales. There were many many articles about tar, tar

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1 handling and sales of tar. Within these operating notes.

2 Which were intended to give instructions to the subsidiary
3 plants.

4 MR. FELMLY: Now let's take a look at the meeting of
5 April 15, 1914, of -- that is reflected in this set of the
6 notes which is at the top of the right-hand column, Denise.

7 Q. What is it about this particular description or topic that
8 would, I guess, support the statement you just made?

9 A. This section of the notes is talking about how to deal --
10 how to separate tar emulsions, and is recounting success at
11 various plants, so that the other subsidiary plants can take
12 advantage of that knowledge.

13 As I pointed out earlier, there were emulsion management
14 equipment at the Charleston plant, so this would be very
15 pertinent to the Charleston plant.

16 MR. VARON: I still can't get the reference to this
17 one, just because it's cut off on the screen. This -- what's
18 the Bates stamp?

19 MR. FELMLY: 03541. If we could go now to the next
20 one, which is 03492. This is minutes -- these again are from
21 the UGI engineering and operating notes of 1913, March of
22 1913. I'd like to go to the right-hand column, Denise, over
23 at the right side right about there.

24 Q. This one is called increasing revenues from residuals, and
25 there's a discussion there. You talked a little bit about

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1 residuals in terms of revenues. What's the topic that's going
2 to be addressed here?

3 A. Well, the issue at this point in time was that the price
4 of tar was low. So UGI headquarters was using this article to
5 give the subsidiaries ideas about how to squeeze more money
6 out of residual sales. For example, how to inform people who
7 might buy tar, about other applications of tar.

8 Q. You know, if we could go over to the top of the left
9 column in this same one and address a slightly different
10 topic.

11 And I realize this is at the spine when this was Xeroxed
12 and these are old documents. But we see in the top paragraph
13 a reference to George H. Waring, referencing Omaha, Nebraska.
14 While this is published in 1913, is that our George Waring
15 that came to Charleston, Dr. Shrifrin?

16 A. That is the same person. And it's very important to
17 realize that this -- these operating notes are proprietary and
18 internal to UGI. And this is one of the reasons why I say
19 that George Waring, despite the fact that he may have gotten
20 his paycheck from CCR&L, he was a UGI person. He was a UGI
21 employee.

22 MR. FELMLY: If you go down to the body of where it
23 says in Omaha, and this is the Waring article, in that
24 vicinity, Denise. Actually I want to start right down at the
25 bottom, says in Omaha after tar separation.

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1 Q. Is this, as you understand the way this is set up, is Mr.
2 Waring giving his descriptions of how they did tar work and
3 separation in Omaha?

4 A. Yes.

5 Q. And in terms of the importance or prominence of these
6 notes in the technological discussion and sharing of
7 information at UGI, does presenting papers in that document,
8 from what you've read of it, seem to be of some significance?

9 A. Well, it's very significant. Because when you take this
10 as its cumulative effect, this is informing all of the
11 subsidiary plants of all of the best technology from the
12 various plants. Over 100 different plants. And they're
13 transferring all that technology. And this is one of the
14 points that UGI has made to justify its existence at the time,
15 and its control over the companies, that every company could
16 get the benefit of its expertise and its operational
17 knowledge. And all of these articles in -- or almost all of
18 these articles in the operating notes, are about operations.

19 MR. FELMLY: If we could go to the next item, Denise,
20 3514 -- five, rather.

21 Q. Let me first -- this is the UGI engineering and operating
22 notes, but I think this is the first page one we've seen. Is
23 the legend that you were talking about before that references
24 the confidentiality of this document?

25 A. Yes. Every issue that the plant received of this had this

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1 at the top of it, and they were to put it in the binder and
2 keep it secret.

3 Q. So it was to be filed in a special filing binder,
4 furnished to the recipient for the purpose, it's intended only
5 for the perusal for the person to whom it is addressed and
6 such other employees as are deemed by him to be properly
7 qualified to appreciate its contents and to respect its
8 confidential nature. It is not to be taken from the office.
9 It should not be accessible to those from whom it was not
10 intended.

11 And you're saying that appeared essentially in each of the
12 issues?

13 A. Right.

14 MR. FELMLY: And, Denise, if you could go down to the
15 first article on the left side of this, and can you just
16 highlight the heading of it, if you would. Thank you.

17 Q. Tar products as made by the Omaha Gas Company and their
18 uses, and that's a paper by Alfred Hausen, a residual salesman
19 at the company.

20 Was it uncommon for there to be articles about tar and tar
21 by-products in the engineering and operating notes?

22 A. No, it wasn't uncommon. They were scattered throughout
23 the notes. It wasn't necessarily the central topic, but
24 because tar is intimately associated with gas production,
25 there were numerous articles about tar production as well as

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1 about gas production.

2 MR. FELMLY: If you could go to 3495, Denise, the
3 operating notes for June of 1913. 03495. And at the bottom
4 of the page in this particular article, if you could highlight
5 the lower left-hand paragraph.

6 Q. This topic seems to be dealing with cleaning holders,
7 tanks, et cetera.

8 A. Right.

9 Q. And is that of importance in terms of managing
10 by-products of residuals?

11 A. Yes. This article is actually talking about purging the
12 gas before you go in and clean it. But it's recognizing the
13 notion that periodically these tanks and holders needed to be
14 cleaned. And the sludge and the tar and oil at the bottom of
15 the tank after being purged, would need to be managed. It
16 also makes it clear that periodically someone was inside these
17 tanks so they could observe the condition of the tanks.

18 MR. FELMLY: Denise, if you could go to -- I'm going
19 to skip a couple here to move along. 03462. If you could go
20 to that, please. And this is from Mr. Taylor in Philadelphia,
21 I don't have the date handy on that, but these are from the
22 operating notes. And what I would like to highlight is the
23 second paragraph in the article, please.

24 Q. This is discussing obviously efficiencies and profit. And
25 then there's a reference, it's been necessary for the

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1 manufacturer or employer to make a close study of conditions.
2 This has resulted, among other things, in the growth of the
3 by-products business, which by making use of raw materials
4 that formerly went into waste, now supplies the market with
5 many new and useful products.

6 In terms of that business, where is tar in that equation
7 or the ability to make money off tar?

8 A. As I mentioned earlier today, tar sales were often
9 instrumental in whether or not a plant could turn a profit.
10 So -- and the whole sophistication of that issue evolved over
11 time from very early on, some plants discharging their tar and
12 their waste water to -- by 1910, 1920s, almost all plants
13 recovering their tar and selling their tar, and inventing new
14 markets for the tar. And this is talking about that part, to
15 improve the efficiency of the plant, you need to manage your
16 residuals and sell them, so that the economics of the plant
17 make sense.

18 MR. FELMLY: If you could go to 0333, Denise. These
19 are the operating notes, looks like April of 1914, and I'm
20 interested in the paragraph that is in the middle of the left
21 side of the page.

22 Q. Very hard to read, but it says the cost of manufacture of
23 coal gas is, of course, entirely dependent on the value of
24 residuals, and of -- something -- coke is the chief in
25 importance. And it talks about where -- I think it says the

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1 market for coke is good, the coal gas becomes a product that
2 can be sold at a low price.

3 In terms of the by-products that they were making, were
4 they making coke?

5 A. A coal gas --

6 MR. VARON: Who are you talking about?

7 MR. FELMLY: The manufactured gas plants that were
8 within the UGI group of companies.

9 A. The coal gas plants made coke as a by-product. Coal was
10 heated to a couple thousand degrees in the absence of air, and
11 created really three main products; gas, coke and ammonia.
12 And a well run coal gas plant recovered all of those residuals
13 and sold them.

14 Q. A carbureted water gas plant, did that make coke?

15 A. No. A carbureted water gas plant actually used coke as
16 the generator fuel to start making the gas.

17 MR. FELMLY: Okay. Let's go to 36077 and a different
18 topic.

19 Q. This is a journal entry from the Charleston MGP
20 subsidiary, CCR&L. It's in April. I cannot tell you quickly
21 the date on that. I can track it down. But let me ask you
22 this. This is a series of entries related to payments to the
23 United Gas Improvement Company. What is happening with
24 respect to the coal and the sample coal that is referenced
25 here and being charged for?

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1 A. This is an example of the Charleston plant typically sends
2 coal, coke and tar samples to UGI in Philadelphia to have them
3 analyzed in their laboratory. UGI maintained a testing
4 laboratory as a separate division.

5 Q. And what was the frequency or the regularity of that, how
6 often did that happen?

7 A. I'm not sure. I have -- I have seen maybe four or five of
8 these examples in the accounting ledgers for the Charleston
9 plant having sent that to UGI. I don't know if that -- if
10 this was a routine monthly activity or if I evolved them.

11 Q. In the nature of operating a manufactured gas plant, what
12 features of coal would be evaluated in terms of testing or
13 sampling, what was it about coal you would need to know in
14 order to determine if it should be used in the plant?

15 A. The carbon content, the ash content, things like that.

16 Q. If we could go to the next example, please. Here again
17 this is from Charleston, this is for the month of September,
18 and if we go down to July, it says expressage on two samples
19 of tar and one sample of coke from Charleston to Philadelphia
20 laboratory July 14, 1913.

21 What was the Philadelphia laboratory that this stuff was
22 being sent to from the Charleston plant?

23 A. This was a testing laboratory that was a division of UGI.

24 Q. And with respect to the tar, based on what you know about
25 the nature of the business and the uses of tar, what would

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1 they be testing with respect to their tar by-product?

2 A. They would probably be testing the water content and the
3 distillation fractionation of the tar to be able to predict
4 how much creosote the tar could make, how much road pitch the
5 tar could make.

6 Q. If we could go to the next one. And this is another
7 journal entry from CCR&L, this is September 1914. If you
8 could go to the right middle of the page right in the middle
9 of the page. It says under the category sundries, there's an
10 entry for July 15 or so, it says form 225 reports on daily
11 coal results.

12 What's your understanding of what that is?

13 A. Well, that would suggest that the frequency was daily,
14 that the Charleston plant sent samples to the UGI laboratory.

15 Q. Are they buying forms here? Is that what this cost is?

16 A. No, I don't think they're buying forms, I think that
17 that's the form that the results were reported on.

18 THE COURT: Let's take a little break. Let's take
19 about 15 minutes.

20 (A recess was held at this time.)

21 THE COURT: All right, sir.

22 MR. FELMLY: Thank you, Your Honor.

23 Denise, if you could bring up under the waste handling
24 area 946, which is the next section of this Exhibit 158 that
25 I'm referring to.

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1 This is an article from the American Gas Engineering
2 Journal, it's in March of 1919, at roughly the time when the
3 new contracting company was formed. If you could go down on
4 the left side in the first several paragraphs. Everything
5 down to about the spot you were at. Referencing in the
6 second -- well, United Gas Improvement Company has formed a
7 new subsidiary which will be called the United Gas Improvement
8 Contracting Company. What I'm interested in is to have you
9 highlight the sentence at the end of the next paragraph that
10 starts, the construction of manufacturing.

11 BY MR. FELMLY:

12 Q. The construction of manufacturing apparatus and the sale
13 of by-products which have been heretofore divided among
14 several departments of the parent company, will in the future
15 be handled by the new company.

16 So with regard to what's said here, Dr. Shrifrin, they're
17 describing what they're going to do going forward, but with
18 respect to this piece called the sale of by-products, what's
19 your understanding of what UGI did in connection with
20 by-products like tar, before they formed this new subsidiary
21 in 1919?

22 A. Residuals management and sales and promotion of sales was
23 handled within the construction division within UGI prior to
24 this. And because this new UGI Contracting Company was
25 nothing more than just a formalization of making a company of

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1 what already existed inside UGI, the residuals department
2 moved into a new construction company.

3 THE COURT: Is that the name they gave to the company
4 that was formed in 19 -- whenever it was, I thought it was
5 called the Construction Company, not Contracting Company.

6 MR. FELMLY: It was called the UGI -- formal name was
7 the UGI Contracting Company, Your Honor.

8 THE COURT: Okay. I must have misread it.

9 MR. FELMLY: We'll see that in the next exhibit, if
10 we can go there, because they have it listed there.

11 THE COURT: This was the company that was supposed to
12 take over, or at least the parts you read indicated it was
13 going to take over the actual construction itself? And form a
14 separate company, rather than doing it within the company?

15 MR. FELMLY: That's my understanding.

16 THE COURT: And it was called Contracting.

17 MR. FELMLY: Yes, UGI Contracting Company.

18 THE COURT: I'm sorry, I misread it.

19 MR. FELMLY: I will tell you there is a later name
20 that this story goes on, but we're not going to go that far in
21 it today.

22 No, I was looking, I'm sorry, at 0683. And if you could
23 highlight the top so we can identify what it is, these are
24 minutes of the UGI operating committee, December 27th, 1923.
25 And then if you could go to the bottom of the page, because

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1 this is where it really addresses in part the Court's
2 question. If you could highlight the portion at the top of
3 this section, Charleston is discussed.

4 BY MR. FELMLY:

5 Q. But the contract with UGI Contracting Company for testing
6 of plant materials and gas and electric appliances. Now we're
7 past the time where they form it in 1923.

8 What is your understanding from these materials of what
9 the newly formed -- 1919 newly formed Contracting Company was
10 doing with respect to plant materials and residuals?

11 A. I believe that the laboratory division that I mentioned
12 earlier was also moved into the Contracting Company. So this
13 is an invoice from the -- or a charge recording from UGI to
14 the Charleston plant for the Contracting Company, and the
15 laboratory within the Contracting Company to do the testing
16 for the coke and residuals. Coal and residuals.

17 Q. And obviously there are more companies than Charleston
18 listed there. Are they passing these charges on to the
19 operating companies?

20 A. Yes.

21 MR. FELMLY: Denise, can you bring up Exhibit 70,
22 which is an article from the American Gas Light Journal of
23 August 8, 1910, and go to the top so we can identify for the
24 Court what it is. This is -- I'll represent to the Court my
25 original, it says August 8, 1910, American Gas Light Company,

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1 it's Bates number 91126.

2 And I'd like you to go over to the bottom of the
3 right-hand column, Denise, and can you highlight that entire
4 section called items of interest. And in particular, if you
5 could zoom in and highlight the part which is called advices
6 from Philadelphia under the date July 29th. And it may be
7 important -- There we go.

8 Q. So this is an August 8th, 1910 article or section of an
9 article, press release in the American Gas Light Journal, some
10 sort of a journal is particular description. And, Dr.
11 Shrifrin, in terms of what is described there, and
12 particularly as it relates to the role of UGI in connection
13 with the Charleston property, what's important about that
14 section of the article or that portion of this publication
15 from your point of view?

16 A. This is noting the acquisition of the Charleston plant
17 or -- and formation of the subsidiary company that became the
18 operating arm of UGI for that plant. And it also notes who
19 they're installing as the executives or the managers for the
20 plant.

21 Q. And with respect to those people at the bottom, is
22 Mr. Walton Clark identified as the person who will act as the
23 chief executive officer?

24 A. Yes.

25 Q. Do you know what happened to that plan of Mr. Clark being

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1 the chief executive officer, as opposed to Mr. Gadsden taking
2 that role?

3 A. The -- I remember UGI minutes, board minutes presenting an
4 outline of the organizational plan for the Charleston plant.
5 And I can't remember if Clark initially was listed as the
6 chief executive, but when the plant got put in motion, Gadsden
7 was the president.

8 Q. And Gadsden had been a Charleston area lawyer from this
9 area, right from this area?

10 A. Yes, and I think a state senator, too.

11 Q. Who was Walton Clark?

12 A. Walton Clark is a UGI employee, I believe.

13 Q. And how about W.F. Douthirt, do you know whether
14 Mr. Douthirt was a local person or somebody from the UGI
15 organization?

16 A. No, Douthirt was UGI also.

17 Q. And how about Lewis Lillie?

18 A. Lewis Lillie was UGI also. And they were all in
19 Philadelphia, I believe.

20 MR. FELMLY: Your Honor, I would ask that the
21 Exhibit 70 be marked as a full exhibit.

22 MR. VARON: No objection.

23 (Plaintiff's Exhibit 70 received.)

24 THE COURT: Now, what about the capital stock, do you
25 have any comments about that?

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1 A. No.

2 MR. FELMLY: Your Honor, I'd also referenced earlier
3 in the day that excerpt regarding the Century of Public
4 Service document, and I now know where that quote came from,
5 but there are two documents about South Carolina Electric and
6 Gas Company historical materials. Both, I believe, are
7 without any objection, and I'd like to move that Exhibit 2,
8 which is entitled South Carolina Electric and Gas Company by
9 Pogue, and Exhibit 3, a Century of Public Service by South
10 Carolina Power be marked as full exhibits.

11 MR. VARON: No objection. I take it they're the full
12 versions.

13 MR. FELMLY: Yeah, they're what we gave you, I
14 believe they're the --

15 MR. VARON: Okay.

16 (Plaintiff's Exhibits 2 and 3 received.)

17 MR. FELMLY: There's every page, I believe --
18 certainly every page we gave you and you have.

19 BY MR. FELMLY:

20 Q. I'd like to turn now, Dr. Shrifrin, to some aspects about
21 the people who were involved in the actual running of the
22 plant, people who were involved in the operational aspects
23 that relate to the making of gas and the process by which that
24 was done.

25 MR. FELMLY: And in order to do that, Your Honor, we

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1 have assembled a composite exhibit which is Exhibit 160. Let
2 me just check with you, I know I referenced it yesterday, is
3 Exhibit 160 a full exhibit? So this was marked yesterday and
4 I made a couple references from it to Mr. Waring who obviously
5 is of some importance here, and I won't go back over that. At
6 least not those same ones.

7 But I would like to address first, Denise, 0427 in the --
8 if you could bring up 0427, I'd appreciate it. SCANA 000427.
9 It's I think the fifth slide, I eliminated the first four
10 because we used them.

11 Q. Okay. So this is Charleston Consolidated Railway and
12 Lighting minutes of March 22, 1922. And the middle of the
13 page there's a reference to appointments being made. And in
14 that regard, this is again for the Charleston subsidiary. Who
15 was appointed the manager at that time?

16 A. Stuart Cooper.

17 Q. And do you know anything about Mr. Cooper in terms of his
18 either relationship or connections with UGI?

19 A. Cooper worked for UGI. He was transferred into this plant
20 to take over the management of the plant after Benedict moved
21 back to UGI.

22 Q. The individual at the top of this list, the person who was
23 appointed the general superintendent for the company in
24 Charleston, Rollin Norris, what do you know about Mr. Norris?

25 A. Rollin Norris was a UGI employee in Philadelphia and he

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1 was in charge of all superintendents throughout the
2 organization.

3 Q. Was he a very long time, essentially life-long UGI
4 employee?

5 A. I believe so.

6 Q. How about purchasing agent J.A. Pearson, what was
7 Mr. Pearson's affiliation in terms of employment as you
8 understand it?

9 A. I believe that Pearson was a UGI employee. In
10 Philadelphia. This -- and he -- he represented the
11 centralized purchasing approach that UGI used where it bought
12 coal and coke and oil, centrally from Philadelphia, and had
13 all of the subsidiary companies pay for it.

14 Q. Let me just -- I'm going to come back to Mr. Pearson.
15 Pearson was in Philadelphia and did purchasing for who?

16 A. For all of the subsidiary companies.

17 Q. So he essentially was purchasing agent for most, if not
18 all of the operating companies?

19 A. That's right. Under the name of UGI, but for the
20 subsidiary companies.

21 Q. And with respect to purchasing, the areas that he would be
22 involved in would include what, what types of things would he
23 be buying for these companies from Philadelphia?

24 A. Coal, coke, oil.

25 Q. Are those --

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1 A. Pipe.

2 Q. Pardon?

3 A. Steel pipe, things like that.

4 Q. So these would be the major expenditures for the plant?

5 A. Yes. For the operating expenditures.

6 MR. FELMLY: If you go down, Denise, further at the
7 bottom of this page there's a section on Mr. Cooper; if you
8 could highlight that and zoom it.

9 Q. Now, this is 1922, the president stated that Mr. Cooper,
10 the vice president and manager, would act as the executive
11 head of the company in Charleston in the absence of the
12 president, and that he would be in general charge of all
13 departments of the company's business in Charleston.

14 What's your understanding of what's occurring here with
15 respect to Mr. Cooper coming from Philadelphia?

16 A. Well, Cooper is covering for Gadsden, who has by this
17 point in time moved to Philadelphia permanently to become the
18 public relations manager for UGI. And Gadsden retained the
19 title of president for the Charleston plant, but because of
20 his absence, there needed to be a manager of the company, and
21 they're putting Cooper in that place.

22 MR. FELMLY: If you could bring up, Denise, the next
23 exhibit, 3416, please. Excuse me, 3466. And this is going to
24 be -- we're going to do two things with this. First we're
25 going to identify it. These are from the UGI engineering and

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1 operating notes, and these are, Your Honor, from June 1919.

2 If you could focus in so that Dr. Shrifrin and I can and the
3 Court can see it here.

4 Q. These charts that are set forth here with respect to the
5 companies and personnel are what, Dr. Shrifrin, what are we
6 seeing here in the 1912 operating notes?

7 A. We're seeing the organization, the management organization
8 of the Charleston plant.

9 Q. And are we also seeing the management organization of
10 other plants?

11 MR. FELMLY: If we expand this again, Denise.

12 Q. Is it set forth that so essentially they are listing who
13 the officers are in the various UGI plants around the country?

14 A. That's right. I believe there's about five pages of this.
15 In this particular issue.

16 Q. And if we look at just staying on this page with
17 Charleston, we see that Mr. Gadsden is listed as president,
18 Walton Clark as listed as vice president, Mr. Lillie is
19 listed, James Ball is listed, Benedict, Douthirt, Pearson is
20 listed as purchasing agent. If we go over to the right and
21 look at the top right column -- open the screen up. If we go
22 to that top right and do the Chester County Gas Company, is it
23 your understanding that the people we see here with the same
24 names are the same people at UGI?

25 A. The same names are the same people, that's right. These

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1 UGI people served both as officers and directors of many of
2 the companies within the subsidiary organization.

3 Q. So if you went to the left side to Allentown, Denise, on
4 the first page, and you looked here in 1912, and we see who
5 was the officers of the Allentown, we'd see Walton Clark and
6 Lillie and Ball.

7 A. Douthirt.

8 Q. Douthirt. If you go over to Connecticut Lighting and
9 Railway Company on the right side there, we'd see Lillie,
10 Clark, Ball, Douthirt. You've had a chance to see this.
11 They're not all like that, are they; there's some that have
12 different names, aren't there?

13 A. The names change, but there's a handful of names that pop
14 up at almost all of the plants from UGI, the UGI headquarters.
15 And, in fact --

16 THE COURT: Do you have any evidence where any of
17 these people lived? I mean, people that were made officers
18 and directors at Charleston.

19 A. No, some of them lived in Philadelphia. And that's
20 confirmed by -- there were obituaries where the UGI Circle
21 would have obituaries for Lewis Lillie and Douthirt, and noted
22 that they lived in Bryn Mawr and talked about their house and
23 their wives in Bryn Mawr. But many of these same people which
24 were the organizers of UGI, originally were on the board
25 and/or officers throughout the organization around the

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1 country.

2 Q. So if we go back to Charleston on that first page that we
3 were just looking at, we know Mr. Gadsden was local attorney
4 here. Walton Clark, is he a UGI Philadelphia-based person?

5 A. Clark, I believe, is, yes.

6 Q. Mr. Waring is the individual that was listed in the
7 document we saw yesterday that was transferred from the Omaha
8 UGI subsidiary to this area here, Charleston.

9 A. That's right.

10 Q. Lillie's from Philadelphia of UGI?

11 A. Lillie, I believe, was one of the founders of UGI.

12 Q. James Ball is in the treasurer's department at UGI in
13 Philadelphia?

14 A. Right.

15 Q. Assistant Treasurer Benedict is Philadelphia UGI?

16 A. Received button of 35 years of service for UGI when he
17 retired.

18 Q. Mr. Douthirt -- I'm sure I'm mispronouncing his name -- he
19 is a UGI Philadelphia person?

20 A. In Philadelphia, right.

21 Q. Mr. Pearson, the purchasing agent, is the purchasing agent
22 on many of the -- trying to find one where he is not the
23 purchasing agent. Mr. Pearson is the purchasing agent for UGI
24 in Philadelphia and is commonly the purchasing agent for the
25 companies, is he?

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1 A. That's right. And that's not surprising, because of the
2 way UGI purchased materials for the subsidiary plants.

3 Q. And we won't do this on every page, but if you go through
4 these plants across the country, the names that we've been
5 looking at, Lillie, Ball, Clark, and there are others like
6 Bodine and some other people that are long-time UGI
7 executives, they commonly in this time frame in 1912 were
8 involved as the officers of the company, is that true?

9 A. That's right. And for the Charleston plant, depending on
10 the period of time, there was always a UGI Philadelphia person
11 on board of directors, and for some periods of time the
12 majority of the board of directors were Philadelphia people.

13 Q. Now, let me ask you, are you familiar with a term, cadet
14 engineer or a cadet engineer program?

15 A. Yes.

16 MR. FELMLY: And, Denise, could you bring up 08077,
17 please.

18 Q. And in the middle of the page there is a reference in this
19 UGI minute, it talks about the recommended appointment of
20 Thomas Hopper, at present a cadet engineer in Des Moines.

21 Now, this is referencing their Syracuse company, but it's
22 the first reference I had to cadet engineer. Hopper, we had
23 actually seen earlier today on some of the plant inspections
24 in Charleston.

25 What is your understanding, Dr. Shrifrin, of what the

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1 cadet engineer position or program was?

2 A. It was basically UGI's training program where UGI would
3 hire sometimes a half dozen, sometimes a couple of dozen newly
4 graduated engineers from various universities, and then place
5 them in different plants that it owned as subsidiaries, and
6 then transferred them from plant to plant as they moved up
7 their career.

8 So if they placed a new cadet engineer or freshly out of
9 college in a very junior position at one plant, and that
10 engineer was ready to be promoted to a higher level because of
11 his experience, and there was no position at the plant that he
12 was currently in, UGI would transfer him to a different plant.
13 And this happened all over all of the subsidiaries.

14 Q. So are there many references similar to the one we're
15 seeing here where there are references to cadet engineers?

16 A. I've seen perhaps several dozen references to cadet
17 engineer transfers. Several of which are at the Charleston
18 plant.

19 MR. FELMLY: Denise, if you can bring up 0623 from
20 the UGI Circle. This is from June 1932, and it's discussing a
21 long time UGI employee, Dr. Humpfries, and I'm particularly
22 interested in lower left side of the page and onto the upper
23 portion of it.

24 Q. Is it your -- what is your understanding about
25 Dr. Humpfries' role with respect to developing this technical

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1 program of cadet engineers?

2 A. Humpfries appears to have established the program. And
3 Humpfries retired fairly early in the program, I think he
4 retired before 1900. But he's credited here as establishing
5 the program, and then Norris managed it for a long period of
6 time. And when Norris retired, he talked about how he managed
7 the program and, you know, how great a thing it was for the
8 company.

9 MR. FELMLY: If you could go up to the top of this
10 page so that we can read the rest of this section about
11 Dr. Humpfries.

12 Q. The reference here, and this of course is in the UGI
13 Bulletin, or Circle, they're referencing the importance of
14 this to their businesses.

15 To what extent, as you went through the materials, and
16 seeing many many articles and descriptions of UGI and the
17 reasons for its success, how would you place its descriptions
18 about the cadet engineering program? Was it something it was
19 proud of?

20 A. Well, not only was it proud of it, it was central to its
21 operation. When you step back and look at UGI as an
22 organization, it was very efficient. Forget about the
23 business efficiency, it was very efficient in terms of
24 manufacturing gas and making these plants very well run. And
25 one of the reasons it was able to do this is that it played a

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1 central role in training and career development for its
2 engineers, the people who were actually operating the plants.
3 It paid a lot of attention to that. And it paid off. I mean,
4 it was a well run organization. The subsidiaries were
5 generally well run.

6 MR. FELMLY: If you could go to 0524, please, Denise.

7 Q. Now, this is the UGI Circle, and the article in question
8 is entitled Adieu. Rollin Norris, the long-time individual
9 you were just talking about, essentially saying good-bye in
10 the body of that to the organization, is it not?

11 A. Right.

12 Q. And Mr. Norris starts the article by saying that he came
13 to UGI as a cadet engineer. So he was a cadet engineer. And
14 in particular, and commenting on what you were just saying,
15 where Mr. Norris is talking about for the greater part of the
16 time since then, my work has brought me in close contact with
17 our various plants and their operating forces. And for many
18 years it has fallen to my lot to be largely responsible for
19 the selection of cadet engineers of the company and for
20 shifting them from plant to plant as the opportunity for
21 promotion arose.

22 He goes on to say, this has given me a particularly close
23 feeling towards our younger men.

24 Incidentally, maybe the times would make this clear, we do
25 see many many references in these papers to men and the male

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1 gender. In general in this time frame back in the early
2 1990s, was this largely a male-dominated company?

3 A. In the early 1900s, yes.

4 Q. 1900s, not --

5 A. Right.

6 Q. It's been a long day; I missed that.

7 MR. FELMLY: Now, if you could go over to the right
8 side, Denise, and the last paragraph that we see on the page
9 there.

10 Q. So he's talking about the importance of this bringing in
11 men, strictest integrity, trained to think straight, act
12 justly, courageously. It's been the policy of this company to
13 take in its force more young men than it could reasonably
14 expect to provide, and that's actually, as he goes on to say,
15 he's been able to send some of those people to other
16 companies, is that right?

17 A. Right.

18 Q. Based on your review of the documents and the review of
19 the minutes and the things that discuss the cadet engineer
20 program, to what extent have you seen evidence of what he's
21 describing where he says in the left column that he has
22 shifted them from plant to plant as opportunities for
23 promotion arose.

24 A. I have seen several dozen specific transfer notices within
25 the UGI board minutes.

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1 THE COURT: Does UGI manufacture any gas itself? In
2 Philadelphia?

3 A. The closest I think it came was it had a very close
4 relationship with a Philadelphia Gas Works. And I don't know
5 exactly the business relationship. But it was a very large
6 plant and UGI ran it. And because they were co-located in
7 Philadelphia, I think they went back and forth quite often.

8 THE COURT: But all of the other gas production
9 business was done through subsidiaries?

10 A. Through subsidiaries, I believe.

11 MR. FELMLY: If you could go to 04599, this is again
12 from the UGI Circle, and this is now talking about
13 Mr. Forestall paying tribute to J.G. Davis; this is the 1921
14 period. If you go to the bottom left side of the column,
15 bottom left column he's referencing Mr. Davis and recognizing
16 him.

17 Q. As such, he had charge of the hundreds of college
18 graduates who, since 1898, began their career in the gas
19 business as cadet engineers, street clerks of the Philadelphia
20 distribution department. Many of these men are now engineers
21 and managers in gas works throughout the country and owe much
22 to the training received while doing their part in making an
23 unequaled system of street main records.

24 So this seems to be a part of the gas business dealing
25 with the distribution through the street portion?

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1 A. Right.

2 Q. Do we know, Dr. Shrifrin, or do you know if the cadet
3 engineering program had a formal course of instruction or
4 textbooks or professors, or how they dealt with it on a
5 day-to-day basis?

6 A. I don't recall ever seeing an operation manual for the
7 cadets themselves. But I know that UGI participated very
8 closely in developing university engineering programs for gas
9 manufacturing. They had a close relationship with Columbia
10 University, they had a close relationship with Rutgers
11 University, I believe University of Pennsylvania. And they
12 had -- they were instrumental in developing and calling for
13 demanding for better programs of engineering education within
14 universities for gas manufacturing. And then of course they
15 would capture up these cream of the crop and make them -- put
16 them through the cadet program.

17 MR. FELMLY: If you could go to 04641.

18 Q. Now, this is a lot of very small type, but let's go to the
19 top of the page, this is again the UGI Circle, and they're
20 profiling a very large number of people.

21 Dr. Shrifrin, in terms of this description in the UGI
22 Circle, are they profiling people who have been in the company
23 or have gone through various programs of training in the
24 company? Or included in this list is that?

25 A. Yes. They put the word graduate in quotes, and I think

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1 that's referring to graduation from the cadet program.

2 MR. FELMLY: Well, let's take a look at some of that.

3 If we go down to Alfred Hurlburt here on the left side,
4 Denise, if you can bring that up, let's try to see what
5 they're saying about Mr. Hurlburt. And I'm losing him. No,
6 it's up higher than that. He's right in the middle.

7 Q. So they're referencing the individuals, the Philadelphia
8 company Philadelphia -- excuse me, Pittsburgh, Pa., another
9 man whose graduation is difficult to realize. Long identified
10 with Broad and Arch and a frequent visitor while in Kansas
11 City.

12 Do you have any understanding whether that was referencing
13 somebody who was a cadet?

14 A. I believe it was a cadet. Broad and Arch refers to UGI
15 headquarters, and I believe this is referencing his
16 retirement.

17 MR. FELMLY: If you could go to the bottom of the
18 page where it says E.G. Pratt, East Ohio Gas Company, then go
19 up to the top.

20 Q. Indelibly associated with Des Moines in the eyes of old
21 timers in the UGI. Hard to believe he is really a graduate?
22 And then down at the bottom we'll see George Waring. George
23 Waring eventually went to Grand Rapids, Michigan, is that
24 right?

25 A. Right. I think he became a private consultant.

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1 Q. Actually there are several Warings there, but --

2 THE COURT: You're saying graduated means that they
3 retired?

4 A. I believe in this case, having gone through the cadet
5 program and then retiring.

6 THE COURT: Okay.

7 BY MR. FELMLY:

8 Q. If you go to Mr. Wood down below where they say originally
9 a cadet engineer in Philadelphia. No UGI graduate is better
10 known or liked than Little Wood.

11 In terms both the loyalty and longevity of people who came
12 through this program and were part of the UGI company, do you
13 have any observations as to what the nature of that was?

14 A. About whether -- how their longevity compared to like
15 other companies?

16 Q. Right.

17 A. I believe in many cases these people came in at the
18 beginning of their career and worked for UGI and got
19 transferred through the subsidiaries and then retired. Worked
20 their entire career for UGI.

21 Q. So if we take C.H. Waring, and I don't know if he's
22 related to George or not, the one immediately above him, he
23 started as a cadet engineer in Kansas City, then an
24 engineering assistant, Wyandotte County, then an engineering
25 assistant in the UGI Contracting Company, graduated as an

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1 assistant engineer of the Kansas City Gas Company with the
2 sale of our interest in that company. Is that profiling his
3 career, and then the 'graduate' term is essentially saying he
4 went into retirement?

5 A. Or left UGI.

6 THE COURT: Which of those was the man in charge?

7 A. George.

8 MR. FELMLY: The second one, George H. Waring.

9 THE COURT: I think it's noteworthy that they don't
10 even refer to his being associated with Charleston, I mean, as
11 if that was not a step in his career. Maybe I'm wrong, but
12 they show him as a UGI employee, but never as a Charleston
13 employee.

14 MR. FELMLY: In this sheet they reference him in that
15 fashion. As I showed you yesterday in many other of the
16 references, and just immediately, if we were to bring up just
17 quickly on that point, Your Honor, if you bring up, Denise,
18 90936, which is American Gas Engineering Journal in 1917,
19 where he is described. It does -- this is a profile in the
20 professional literature, it does describe his history, and
21 indicates that he is the manager in Charleston, although this
22 is just before his leaving, and describes the fact that he was
23 sent to Charleston by UGI from Omaha, where he was the head of
24 the plant.

25 It also, by the way, indicates here that C.M. Benedict,

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1 the assistant secretary and treasurer of the company will
2 succeed Waring. And Benedict was the individual we saw
3 earlier in many of the references from the lists of people in
4 Philadelphia.

5 Denise, if you could bring up 1248. UGI-ISC 001248. If
6 you could go to the top, this is the UGI Circle, and the
7 heading is called young engineers begin their career. And if
8 you could go to the top paragraph that describes what we're
9 seeing here.

10 They're describing young engineers coming out of colleges.
11 And then starting with the term, many such men come in each
12 year into the UGI company and the companies in which it's
13 interested, to fill the places of other engineers who have
14 moved up the line as their experience has equipped them for
15 greater responsibilities. The Circle takes pleasure in
16 introducing and welcoming into the family circle this year's
17 crop of cadets.

18 Then if you could span out to the rest of the page, they
19 then introduce with photographs the people who have come in,
20 and in that area if you could highlight that, we have the
21 gentleman from Charleston. John Gerson, who is coming in, in
22 that year.

23 BY MR. FELMLY:

24 Q. I guess before we leave this issue of the cadet engineers,
25 sir, in terms of evidence of control, in terms of the issues

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1 that you opined on and your belief of control, what is the
2 significance, if any, of the cadet engineering program in your
3 opinions?

4 A. Well, remember that my opinions on control deal with
5 operational control, not with business control. And these are
6 engineers, they're not business people. And these are the
7 people that UGI plucked out of the newly graduated program
8 from universities such as these, the University of
9 Pennsylvania, and placed -- headquarters placed these new
10 engineering graduates into the Charleston plant. By doing
11 that, and then further transferring people and moving them up
12 the line and bringing in people at higher levels, UGI dictated
13 the people at the plant who were literally operating the
14 plant.

15 Regardless of whether these people got their paychecks
16 from CCR&L, it was UGI that hired these people and placed
17 these people and transferred these people in and out of the
18 Charleston plant.

19 MR. FELMLY: Could you bring up 0015, please, Denise.
20 And I'm interested, this is the UGI minutes for August 2nd,
21 1910. And I'm interested in the middle section, the middle --
22 That one.

23 Q. The employment of Mr. E.C. Kollock as a cadet engineer.
24 Who was Mr. Kollock?

25 A. Kollock was actually George Waring's apprentice, if you

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1 will. Kollock was an engineer at Omaha, and was transferred
2 from Omaha just as Waring was, but after Waring, into the
3 Charleston plant.

4 Q. So the time frame -- Waring had come from the Omaha plant,
5 and that was obviously in that summer of -- I don't know when
6 he arrived, but these events were in the summer of 1910,
7 Kollock was also at Omaha with Waring?

8 A. And -- right, and most likely Waring brought Kollock with
9 him.

10 Q. And Kollock is employed then as a cadet engineer at
11 Charleston?

12 A. That's right.

13 Q. In that first year that UGI arrives.

14 A. That's right. And this transfer is being done by UGI.

15 MR. FELMLY: Well, let me go to the top of the page.
16 The minutes that we're looking at here recommending that
17 employment to UGI -- to CCR&L, is in which minutes, Denise, if
18 you could go to the top. These are in the UGI minutes for
19 what date? August 2nd, 1910. Now, do we know anything --
20 have you seen any records or do you know whether or not Waring
21 made any recommendation on that or initiated that himself?

22 A. I don't think I've seen anything to that effect.

23 Q. Underneath this reference, Mr. Kollock's traveling
24 expenses from Omaha to Charleston were to be paid, there's a
25 parenthetical reference. What is that? What, in terms of UGI

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1 format is that parenthetical reference, and what do you
2 understand is happening with reference to that letter?

3 A. It's referencing a letter from Rollin Norris to Clark,
4 presumably where Norris made that recommendation to pay the
5 moving expenses. And where Norris made the recommendation to
6 place the cadet engineer, most likely, because Norris was the
7 general superintendent at UGI, so Norris would have the
8 authority and the expertise to decide what technical people,
9 what engineers should be placed at -- in what level at what
10 plant.

11 Q. Was Norris the individual who in the earlier thing we saw,
12 Adieu, said it's been my lot to move people and send them and
13 promote them through the companies?

14 A. That's right. So this is consistent with that.

15 MR. FELMLY: If you could go to 2235, please, Denise.
16 And these are minutes in April of 1927, which is the year
17 right after UGI was not in Charleston, but I want to ask you
18 about the language that appears with respect to the cadet
19 engineering program. If you could focus on the bottom of the
20 page where it talks about cadet engineers various companies.
21 And it's talking about voting on various recommendations, and
22 if you could go to the next page, Denise. And at the top, if
23 you could highlight the top paragraph there.

24 Q. What, in terms of this process of UGI dealing with
25 graduates coming out of college and focusing on people that

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1 they want to make cadet engineers, what do you understand this
2 note is doing? Or this minute and authorization is doing.

3 A. This is assigning the engineers to the various plants.
4 This gives you a bigger scope of how it wasn't just
5 Charleston, but UGI did this throughout its organization.
6 Placing both gas engineering cadets and electric plant
7 engineering cadets at the various plants.

8 On the prior page it was noted that J.A. Perry had written
9 a memorandum recommending this. By this point in time Perry
10 was the general superintendent, so he was in charge of the
11 program.

12 MR. FELMLY: Denise, if you could go just below this
13 table to the two paragraphs or three paragraphs that are just
14 below that. If you could just zoom up a little bit more so we
15 could easily read that portion there.

16 Q. Now, I'm interested in the last part of this. These are
17 individuals that are going to be sent and working at a number
18 of local operating plants that are subsidiaries, is that
19 right?

20 A. That's right.

21 Q. And in terms of the salary of these folks, what is being
22 determined in connection with these people employed in 1926?

23 A. UGI is setting the salaries centrally for these people to
24 then be moved to the local plants.

25 MR. FELMLY: If you could go to 10386. UGI minutes

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1 010386.

2 Q. Okay. These are UGI executive committee minutes, they are
3 March 23 and 22. And if you could go down to the action
4 dealing with the cadet engineers' authorization, which is
5 right at the top part of -- up higher than that.

6 This is an authorization of employment of 12 additional
7 cadets. And with respect to this, Dr. Shrifrin, in terms of
8 how they are going to be deployed, what's your understanding
9 of what UGI is doing with these new cadets that they're
10 bringing into the organization as engineers?

11 A. They are assigning 12 cadets to -- I think it's eight
12 different subsidiary plants. And establishing their salaries
13 centrally.

14 Q. And the salary is down here in this lower end?

15 A. Correct.

16 Q. So in terms of whether the cadet engineers who were
17 involved in operating engineering features of these plants and
18 being trained and developed in them, what's your understanding
19 as to the role that these individuals played at the actual
20 plants, what kind of activities would they be doing in terms
21 of day-to-day operations?

22 A. They would be determining the operation of the gas making
23 and the various appurtenant equipment such as tar refining or
24 tar separation. Generally these plants had six to 12 people
25 working in them, and there were several laborers who would

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1 move the coal around or stoke the coal or fill the generator,
2 clean out the generators, clinkers. And then there would be
3 supervisors over them. And typically these cadets would start
4 in that supervisory capacity, some of them working up to plant
5 superintendents.

6 Q. To what extent, Dr. Shrifrin, did the UGI minutes and the
7 authorization documents that we have seen actually address
8 either pay or working conditions of individual operating
9 employees that were in the plant such as Charleston?

10 A. As we've seen in the last couple examples, in the -- for
11 the cadet program, for the cadets that were placed within the
12 plants, UGI centrally established the salaries for those
13 specific positions. UGI also, I've seen UGI minutes
14 establishing salaries for other operating personnel, specific
15 named individuals. So-and-so will get \$630 a month. And
16 those named individuals were operating personnel.

17 The other approach that I've seen in UGI minutes, and by
18 the way, corresponding CCR&L confirmation minutes, would be
19 where UGI authorized, the UGI board authorized generalized
20 salary increases for the forthcoming year, and then I would
21 see in parallel in the CCR&L minutes, where that budget was
22 then allocated among individual people within the minutes of
23 the directors.

24 MR. FELMLY: Bring up UGI-SC 00025. And these are
25 UGI minutes of September 6, I think it is, 1910. Yes,

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1 September 6, 1910. So this is again that first summer that
2 UGI was involved. If you could go to the bottom of the page,
3 the entry involving Mr. Taylor.

4 Q. Now, with respect to Mr. Taylor, is Mr. Taylor somebody
5 that was reflected in the organization chart when it first was
6 developed for what would happen in Charleston?

7 A. I think so. I don't remember specifically.

8 Q. But at any rate, according to this, and this of course
9 isn't that summer, what happened to Mr. Taylor so that he was
10 not actually at Charleston or stayed at Charleston?

11 A. He apparently got sick right away. They never established
12 him as an employee. They did, by the way, pay his moving
13 expenses. There's other minutes that show that.

14 Q. And the -- in terms of how they described Mr. Taylor
15 coming from one UGI subsidiary to another, the terms they used
16 was transferred?

17 A. Transferred. That's right.

18 Q. Is that a term that apart from this example that you --
19 and I think we've seen a couple of others in this trial -- are
20 there other occasions where you've seen the use of the word
21 transferred between one subsidiary and another?

22 A. I've seen it dozens of times. And I've only paid
23 attention to the operating personnel. There may be other
24 examples of business personnel where that happened. But as
25 you see here, Taylor is coming in as an engineer, so he's an

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1 operating personnel.

2 MR. FELMLY: Denise, if you can bring up SCANA
3 001470.

4 Q. You were just talking a moment ago about moving expenses.
5 This is January 14, 1913.

6 MR. FELMLY: If you could highlight the top of the
7 page.

8 Q. What do we have here, Dr. Shrifrin, in terms of
9 expenditures of money related to UGI coming to Charleston?

10 A. This is CCR&L minutes authorizing the payment of moving
11 expenses for these four individuals who were all operating
12 people. I should point out that I have seen corresponding UGI
13 minutes that have this same number, this same list and the
14 same authorizations. Generally the UGI authorizations are a
15 month or two before the CCR&L authorizations. Although oddly,
16 sometimes there are a couple of years after.

17 MR. FELMLY: Denise, bring up 0062. And these are
18 UGI executive committee minutes from January 27, 1911. If you
19 could go to the middle of the page and highlight that,
20 including the line through Charleston.

21 BY MR. FELMLY:

22 Q. What is this entry, sir?

23 A. I referred to this a moment ago. This is UGI authorizing
24 the total salary increase for the Charleston plant. And then
25 we see in other documents in Charleston documents how this

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1 then gets delineated step by step. But the basic
2 authorization for the staff is set by UGI in Philadelphia.

3 Q. And when it says percentage increase on the far right,
4 what are -- what is that number, what is that applied against?

5 A. My understanding is that that's the total -- percent
6 increase on the total payroll.

7 MR. FELMLY: So 0122, Denise, if you could bring that
8 up. And I'm interested in the top to determine the date, it's
9 October 9th, 1911 minutes, and you should expand a little more
10 so the Court can see what we're talking about. These are UGI
11 executive committee minutes, and if we can go to the bottom of
12 the page, as to the Charleston entry, employment of Allyn C.
13 Taylor as superintendent of the gas department.

14 Q. First of all, the gas department would be what? What is
15 the position that would be contemplated in that title?

16 A. The manufacturing of the gas. There were two plants,
17 there was the electric department and the gas department.

18 Q. And so in terms of an important operating position in the
19 plant, how would you describe Mr. Taylor's position that he's
20 now being hired for?

21 A. The superintendent of a gas plant was the chief operator,
22 had total authority over all operations of the plant.

23 Q. And are you able to determine from this entry, now this
24 again is in 1911, the year after they first came, what
25 happened to the predecessor of Mr. Taylor in Charleston?

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1 A. I don't remember. George Waring was over him as the
2 general manager.

3 Q. But what I'm interested in is do you know what the terms
4 vice --

5 THE COURT: I know what it means; I've read it.

6 MR. FELMLY: Let's go on.

7 THE COURT: And I've read the word transferred.

8 MR. FELMLY: 0159, these are minutes of March 25th,
9 1912. Executive committee minutes. If you could go down to
10 the employment of the cadet, Newton Jackson, it's the first of
11 the bulleted items. I think we've just got to highlight the
12 top one and bring it up a little bit.

13 Q. So is this 1912, and Mr. Jackson, these are UGI minutes
14 recommending the employment of Jackson as a cadet at -- who
15 was at Sioux City, to come to Chicago and to pay his moving
16 expenses. Is that correct?

17 A. That's right.

18 Q. Now, we just saw Mr. Taylor becoming the gas individual in
19 Charleston. And Mr. Lyon being transferred to Florida.

20 MR. FELMLY: But if you could bring up 08833, we have
21 more activity --

22 THE COURT: Mr. Felmy, I don't mean to cut you off,
23 but this could go on forever. And I get the gist of what
24 you're doing here now. You can call my attention to documents
25 that show people that are transferred in and transferred out,

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1 to show the control of UGI, and I can understand that just as
2 well without him. Now, if -- with him reading it. If he can
3 add something to the document because of his knowledge of the
4 operation, fine. Just to go through every document where
5 someone was transferred, that really is not helpful to me.

6 MR. FELMLY: Okay.

7 THE COURT: They're in the record, you can call them
8 to my attention when we start writing findings of fact and
9 conclusions of law, we can pull them out and chronicle them.
10 But to go through them now really doesn't help me a lot. I
11 know what you're trying to prove, I get the gist of it. You
12 can ask him how many more of these there are, and he can say
13 25, 35, whatever, and then let's go on to something else.

14 MR. FELMLY: That's really the issue I had, Your
15 Honor, because I'm obviously building a wall of a lot of
16 different information, and usually -- sometimes I've had
17 judges say, well, you asked the questions of the witness.
18 I'll do it any way you like.

19 THE COURT: No, I think what you've been doing is
20 fine and it's very instructive to me. But as far as this
21 business of people transferring in and out, I've seen enough
22 of that and it's easy for me to digest that. It's in plain
23 English. But a lot of this other stuff, his expertise has
24 helped me understand what the document means, because he's
25 more involved in the context of the document, what was going

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1 on at that time.

2 MR. FELMLY: Would it be helpful to -- I mean,
3 because --

4 THE COURT: Again, I don't want to shape your case in
5 a harmful way for you, but I -- I'm commenting purely and
6 simply on this type document. I don't want to see any more of
7 them. I don't mind seeing them, I just don't need to be led
8 around on the screen.

9 MR. FELMLY: No, I appreciate it, and I have been
10 torn as to how to do it in the most efficient way. And I'm
11 happy to publish them. And the good news is, of this group
12 I've got just a couple of left. And I'm happy to just give
13 you the Bates numbers, if that's helpful.

14 THE COURT: That's fine.

15 MR. FELMLY: Because there are a lot of them. If
16 there's unique ones, I'll call them to his attention. And the
17 bad news is that we deal with financial records and other
18 portions of this, and I'm building a wall of information, and
19 I don't know any other way to do it.

20 THE COURT: Okay. I'm not trying to get you to
21 change.

22 MR. FELMLY: Okay. The next, just to publish this --

23 THE COURT: But I mean, from time to time I might
24 stop you because I've had enough and I don't think I need any
25 more, and that's not from a physical standpoint, that's from a

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1 mental standpoint. But otherwise, you proceed as you wish.

2 MR. FELMLY: I understand that. It's been a long day
3 for me, too, I can tell you, I feel it.

4 Well, Your Honor, just quickly, to wind these up, and
5 these are all part of an exhibit that you're going to have,
6 but the minutes of February 6 --

7 THE COURT: I've already wound that up as far as the
8 transfers, that's wound up.

9 MR. FELMLY: Okay. About increases in salaries of
10 people.

11 THE COURT: You can ask him if any of these documents
12 show that, and then we can move on. I'm going to need to look
13 at these documents. But the way you're cataloging them and
14 all is very helpful to me. It's a big case and a lot of facts
15 involved in it, and I think you've gotten it pretty well
16 organized.

17 MR. FELMLY: Okay.

18 THE COURT: And since that's all you do, I expect you
19 to have it organized.

20 MR. FELMLY: I --

21 THE COURT: I just couldn't resist.

22 MR. FELMLY: I know. I have to tell you, I do a lot
23 of different things beyond UGI, although sometimes my
24 colleagues think I don't. I am doing MTB and everything else.
25 No, I couldn't do it. But it does feel like it sometimes,

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1 Your Honor.

2 BY MR. FELMLY:

3 Q. Dr. Shrifrin, I've got a number of references here, and
4 trying to move this through, and in this exhibit which you've
5 been through with me and we've gone over it, there are a
6 number of references in here for -- the Court can certainly
7 find where UGI is approving increases in Charleston for the
8 various departments and the employees, is that correct?

9 A. That's right. I believe that there are records for UGI
10 authorization for salary increases every single year of its
11 tenure.

12 Q. And one thing we haven't talked about here, and I don't
13 even know we need to put it up on the board. What about in
14 terms of changing the working hour length of the day, is that
15 something that UGI would address?

16 A. Yeah, that's -- of course, the length of the day, the
17 length of the working day is a direct reflection on the
18 operations of the plant. And at one point in time UGI
19 published an edict from -- I think its operations committee --
20 that said from now on, a standard day will be nine hours
21 instead of ten hours. I think it was nine hours instead of
22 ten or eight versus nine.

23 But the point of this is that not only did UGI exercise
24 its control of people in terms of the operations of the plant,
25 but it also even defined what the working day was going to be

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1 in terms of operations of the plant. Of all of the subsidiary
2 plants, including Charleston.

3 Q. In terms of the plant at Charleston, and I'm turning to a
4 different personnel issue involving Mr. Benedict. What was
5 Mr. Benedict's role in connection with the Charleston plant?

6 A. Mr. Benedict took over for George Waring in 1917 when
7 Waring retired. And became the general manager of the plant.
8 I believe that UGI had changed the title of whoever the head
9 person was going to be at that point. But Benedict was the
10 head person. Benedict then got transferred back to
11 Philadelphia after he was replaced by Cooper. I think in
12 1920.

13 Q. Terms of his longevity with UGI, can you tell the Court
14 how long this gentleman had been essentially affiliated as a
15 UGI employee?

16 A. Thirty-five years. There was a UGI Circle that
17 commemorated his retirement and gave him the Sam Bodine award
18 for 35 years of service. A button.

19 Q. And we were talking about Mr. Cooper, the other individual
20 who had come from Philadelphia. Do you know how long
21 Mr. Cooper had been affiliated with UGI? Maybe we can assist
22 you on that.

23 MR. FELMLY: Denise, if you'd bring up 09110.

24 A. At least 24 years, 25 years.

25 Q. This is from the UGI Circle, and it's a story about

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1 Mr. Cooper, who is and was ultimately the manager in
2 Charleston after Benedict. If you go to the bottom of the
3 page, it tells us a little bit about Mr. Cooper. He began his
4 career at the UGI subsidiary in 1905 as a meter tester,
5 advanced to assistant superintendent, went to Syracuse, he was
6 a construction engineer for the New York and Queens Electric
7 Light Company, then assistant engineer to the UGI engineer of
8 distribution in Norristown, and then in 1919 went to
9 Charleston as manager, later becoming vice president.

10 In terms of Mr. Cooper's role with respect to Charleston
11 when he came to town, he had had UGI service for good long
12 time?

13 A. He had started with UGI subsidiaries in 1905.

14 Q. I was asking you before about the roles that cadet
15 engineers might have in the plant in terms of operations.

16 MR. FELMLY: If you could bring up 1260, UGI-ISC
17 001261. I think I said 60, but I meant 61. This is out of
18 the UGI Circle, and if you could go to the second entry on the
19 left side. This is talking about Charleston.

20 Q. Have you seen references to Kingsley Patterson as a cadet
21 engineer?

22 A. Yes, he was a cadet and he was placed into the Charleston
23 plant, and at some point he was noted, as it says here, in
24 active charge of the works, which means that he was running
25 the operation.

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1 Q. Now, we have gone through a tremendous amount of material
2 just in this personnel folder, and probably haven't talked
3 about more than a third of documents.

4 Are there a wide variety of other references in here to
5 salary actions, transfers, UGI actions with respect to terms
6 of employment?

7 A. Yes. It's huge. And I think that the important element
8 of all this is it's the cumulative effect of all of these
9 pieces of information that become convincing, if -- it would
10 be not surprising if somebody worked for some company and then
11 worked for a different company and went back to the original
12 company. But we have almost everybody in the company having
13 worked for UGI or transferred from some subsidiary or
14 transferred back to UGI headquarters. It's the cumulation of
15 all of these pieces of information that become absolutely
16 convincing to me.

17 Q. And in terms of the backup for your report and opinions,
18 is one of the things that you prepared an exhibit, Exhibit 99,
19 which is a table that is a summary of many of the people we've
20 talked about in their various positions with UGI?

21 A. Yes. What this shows is for the various people, one
22 column, the column in the middle shows their role at CCR&L,
23 the Charleston plant, and the column on the right shows their
24 overall UGI role.

25 MR. FELMLY: Your Honor, the good news is the two or

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1 so that I have left of these have much fewer entries in it,

2 but --

3 THE COURT: I think we'll break now for the evening
4 until 10:00 in the morning.

5 What about the weekend? Do all of you plan to stay here
6 in Charleston over the weekend? Do you go home, and if so,
7 what kind of flight accommodations do you need?

8

9 (Discussion held off the record.)

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11 (Court adjourned at 5:40 p.m.)

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1 REPORTER'S CERTIFICATION

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3 I, Debra L. Potocki, RMR, RDR, CRR, Official Court

4 Reporter for the United States District Court for the District

5 of South Carolina, hereby certify that the foregoing is a true

6 and correct transcript of the stenographically recorded above

7 proceedings.

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S/Debra L. Potocki

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Debra L. Potocki, RMR, RDR, CRR

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